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ABSTRACT

This guide provides an overview of Occupational Safety and Health Act (OSHA) standards and training guidelines for various industries. The first section introduces the concept of voluntary training guidelines, explaining that the guidelines are designed to help employers determine whether a worksite problem can be solved by training, what training should be given, how to design and implement the training, and how to evaluate and refine the training. Next is an index of training requirements and sections that cover training requirements for the following areas: (1) general industry, including (among others) means of egress, platforms and manlifts, personal protective equipment, and materials handling and storage; (2) maritime, including shipyard employment, maritime terminals, and long shoring; (3) construction, including (among others) general safety and health provisions, fire protection and prevention, hand and power tools, electrical, scaffolding, excavations, and demolition; (4) agricultural, including applicability of standards, roll-over protective structures, safety for agricultural equipment, and occupational health; and (5) federal employee programs, including (among others) financial management, inspection and abatement, general services administration, occupational safety and health committees, training for such positions as inspectors and representatives, and federal safety and health councils. Supplementary sections provide a list of 10 readings in industrial safety and health training and other resources; a list of states with approved plans; an OSHA consultation project directory; and lists of OSHA area and regional offices. The addendum contains training requirements concerning the use of powered industrial trucks. (KC)

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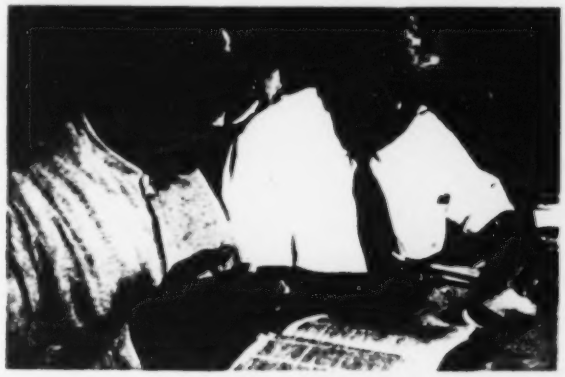

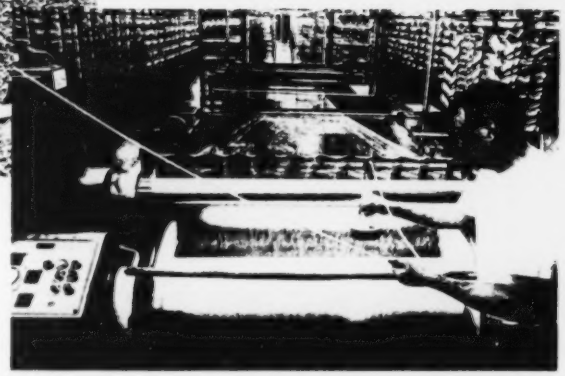

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This informational booklet is intended to provide a generic, non-exhaustive overview of a particular standards-related topic. This publication does not itself alter or determine compliance responsibilities, which are set forth in OSHA standards themselves, and the *Occupational Safety and Health Act of 1970.* Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.

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Training Requirements in OSHA Standards and Training Guidelines

U.S. Department of Labor
Alexis M. Herman, Secretary

Occupational Safety and Health Administration
Charles N. Jeffress, Assistant Secretary

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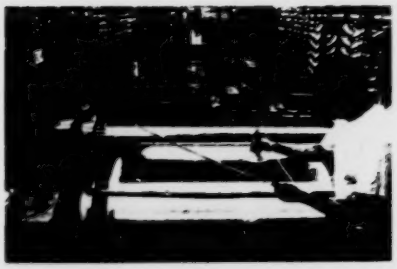

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Many standards promulgated by the Occupational Safety and Health Administration (OSHA) explicitly require the employer to train employees in the safety and health aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified"—meaning that they have had special previous training, in or out of the workplace. The term "designated" personnel means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties. These requirements reflect OSHA's belief that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses. Many researchers conclude that those who are new on the job have a higher rate of accidents and injuries than more experienced workers.

If ignorance of specific job hazards and of proper work practices is even partly to blame for this higher injury rate, then training will help to provide a solution.

As an example of the trend in OSHA safety and health training requirements, the Process Safety Management of Highly Hazardous Chemicals standard (Title 29 Code of Federal Regulations Part 1910.119) contains several training requirements. This standard was promulgated under the requirements of the Clean Air Act Amendments of 1990. The Process Safety Management Standard requires the employer to evaluate or verify that employees comprehend the training given to them. This means that the training to be given must have established goals and objectives regarding what is to be accomplished. Subsequent to the training, an evaluation would be conducted to verify that the employees understood the subjects presented or acquired the desired skills or knowledge. If the established goals and objectives of the training program were not achieved as expected, the employer than would revise the training program to make it more effective, or conduct more frequent refresher training or some combination of these. The requirements of the Process Safety Management Standard follow the concepts embodied in the OSHA training guidelines contained in this booklet.

The length and complexity of OSHA standards may make it difficult to find all the references to training. So, to help employers, safety and health professionals, training directors, and others with a need to know, OSHA's training-related requirements have been excerpted and collected in this booklet. Requirements for posting information, warning signs, labels, and the like are excluded, as are most references to the qualifications of people assigned to test workplace conditions or equipment.

It is usually a good idea for the employer to keep a record of all safety and health training. Records can provide evidence of the employer's good faith and compliance with OSHA standards. Documentation can also supply an answer to one of the first questions an accident investigator will ask: "Was the injured employee trained to do the job?"

Training in the proper performance of a job is time and money well spent, and the employer might regard it as an investment rather than an expense. An effective program of safety and health training for workers can result in fewer injuries and illnesses, better morale, and lower insurance premiums, among other benefits.

Readers with questions concerning worker safety and health training should contact their OSHA Regional or Area office listed at the end of this publication.

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1 Voluntary Training Guidelines

I. Introduction

The Occupational Safety and Health Act of 1970 does not address specifically the responsibility of employers to provide health and safety information and instruction to employees, although Section 5(a)(2) does require that each employer ". . . shall comply with occupational safety and health standards promulgated under this Act." However, more than 100 of the Act's current standards do contain training requirements.

Therefore, the Occupational Safety and Health Administration has developed voluntary training guidelines to assist employers in providing the safety and health information and instruction needed for their employees to work at minimal risk to themselves, to fellow employees, and to the public.

The guidelines are designed to help employers to: **(1)** determine whether a worksite problem can be solved by training; **(2)** determine what training, if any, is needed; **(3)** identify goals and objectives for the training; **(4)** design learning activities; **(5)** conduct training; **(6)** determine the effectiveness of the training; and **(7)** revise the training program based on feedback from employees, supervisors, and others.

The development of the guidelines is part of an agency-wide objective to encourage cooperative, voluntary safety and health activities among OSHA, the business community, and workers. These voluntary programs include training and education, consultation, voluntary protection programs, and abatement assistance.

A. Training Model

The guidelines provide employers with a model for designing, conducting, evaluating, and revising training programs. The training model can be used to develop training programs for a variety of occupational safety and health hazards identified at the workplace. Additionally, it can assist employers in their efforts to meet the training requirements in current or future occupational safety and health standards.

A training program designed in accordance with these guidelines can be used to supplement and enhance the employer's other education and training activities. The guidelines afford employers significant flexibility in the selection of content and training and program design. OSHA encourages a personalized approach to the informational and instructional programs at individual worksites, thereby enabling employers to provide the training that is most needed and applicable to local working conditions.

Assistance with training programs or the identification of resources for training is available through such organizations as OSHA full-service Area Offices, State agencies which have their own OSHA-approved occupational safety and health programs, OSHA-funded State onsite consultation programs for employers, local safety councils, the OSHA Office of Training and Education, and OSHA-funded New Directions grantees.

B. Review Comission Implications

OSHA does not intend to make the guidelines mandatory. And they should not be used by employers as a total or complete guide in training and education matters which can result in enforcement proceedings before the Occupational Safety and Health Review Commission. However, employee training programs are always an issue in Review Commission cases which involve alleged violations of training requirements contained in OSHA standards.

The adequacy of employee training may also become an issue in contested cases where the affirmative defense of unpreventable employee misconduct is raised. Under case law well-established in the Commission and the courts, an employer may successfully defend against an otherwise valid citation by demonstrating that all feasible steps were taken to avoid the occurrence of the hazard, and that actions of the employee involved in the violation were a departure from a uniformly and effectively enforced work rule of which the employee had either actual or constructive knowledge.

In either type of case, the adequacy of the training given to employees in connection with a specific hazard is a factual matter which can be decided only by considering all the facts and circumstances surrounding the alleged violation. The general guidelines in this publication are not intended, and cannot be used, as evidence of the appropriate level of training in litigation involving either the training requirements of OSHA standards or affirmative defenses based upon employer training programs.

II. Training Guidelines

OSHA's training guidelines follow a model that consists of:

A. Determining if Training is Needed
B. Identifying Training Needs
C. Identifying Goals and Objectives
D. Developing Learning Activities
E. Conducting the Training
F. Evaluating Program Effectiveness
G. Improving the Program

The model is designed to be one that even the owner of a business with very few employees can use without having to hire a professional trainer or purchase expensive training materials. Using this model, employers or supervisors can develop and administer safety and health training programs that address problems specific to their own business, fulfill the learning needs of their own employees, and strengthen the overall safety and health program of the workplace.

A. Determining if Training is Needed

The first step in the training process is a basic one: to determine whether a problem can be solved by training. Whenever employees are not performing their jobs properly, it is often assumed that training will bring them up to standard. However, it is possible that other actions (such as hazard abatement or the implementation of engineering controls) would enable employees to perform their jobs properly.

Ideally, safety and health training should be provided before problems or accidents occur. This training would cover both general safety and health rules and work procedures, and would be repeated if an accident or near miss incident occurred.

Problems that can be addressed effectively by training include those that arise from lack of knowledge of a work process, unfamiliarity with equipment, or incorrect execution of a task. Training is less effective (but still can be used) for problems arising from an employee's lack of motivation or lack of attention to

the job. Whatever its purpose, training is most effective when designed in relation to the goals of the employer's total safety and health program.

B. Identifying Training Needs

If the problem is one that can be solved, in whole or in part, by training then the next step is to determine what training is needed. For this, it is necessary to identify *what* the employee is expected to do and in what ways, if any, the employee's performance is deficient. This information can be obtained by conducting a job analysis which pinpoints what an employee needs to know in order to perform a job.

When designing a **new training** program, or preparing to instruct an employee in an unfamiliar procedure or system, a job analysis can be developed by examining engineering data on new equipment or the safety data sheets on unfamiliar substances. The content of the specific Federal or State OSHA standards applicable to a business can also provide direction in developing training content. Another option is to conduct a Job Hazard Analysis (see OSHA 3071, same title, 1981). This is a procedure for studying and recording each step of a job, identifying existing or potential hazards, and determining the best way to perform the job in order to reduce or eliminate the risks. Information obtained from a Job Hazard Analysis can be used as the content for the training activity.

If an employer's learning needs can be met by revising an existing training program rather than developing a new one, or if the employer already has some knowledge of the process or system to be used, appropriate training content can be developed through such means as:

1. Using company accident and injury records to identify how accidents occur and what can be done to prevent them from recurring.

2. Requesting employees to provide, in writing and in their own words, descriptions of their jobs. These should include the tasks performed and the tools, materials and equipment used.

3. Observing employees at the worksite as they perform tasks, asking about the work, and recording their answers.

4. Examining similar training programs offered by other companies in the same industry, or obtaining suggestions from such organizations as the National Safety Council (which can provide information on Job Hazard Analysis), the Bureau of Labor Statistics, OSHA approved State programs, OSHA full service Area Offices, OSHA-funded State consultation programs, or the OSHA Office of Training and Education.

The employees themselves can provide valuable information on the training they need. Safety and health hazards can be identified through the employees' responses to such questions as whether anything about their jobs frightens them, if they have had any near-miss incidents, if they feel they are taking risks, or if they believe that their jobs involve hazardous operations or substances.

C. Identifying Goals and Objectives

Once the kind of training that is needed has been determined, it is equally important to determine what kind of training is **not** needed. Employees should be made aware of all the steps involved in a task or procedure, but training should focus on those steps on which improved performance is needed. This avoids unnecessary training and tailors the training to meet the needs of the employees.

Once the employees' training needs have been identified, employers can then prepare objectives for the training. Instructional objectives, if clearly stated, will tell employers what they want their employees to do, to do better, or to stop doing.

Learning objectives do not necessarily have to be written, but in order for the training to be as successful as possible, clear and measurable objectives should be thought out before the training begins. For an objective to be effective it should identify as precisely as possible what the individuals will do to demonstrate that they have learned, or that the objective has been reached. They should also describe the important conditions under which the individual will demonstrate competence and define what constitutes acceptable performance.

Using specific, action-oriented language, the instructional objectives should describe the preferred practice or skill and its observable behavior. For example, rather than using the statement: "The employee will understand how to use a respirator" as an instructional objective, it would be better to say: "The employee will be able to describe how a respirator works and when it should be used." Objectives are most effective when worded in sufficient detail that other qualified persons can recognize when the desired behavior is exhibited.

D. Developing Learning Activities

Once employers have stated precisely what the objectives for the training program are, then learning activities can be identified and described. Learning activities enable employees to demonstrate that they have acquired the desired skills and knowledge. To ensure that employees transfer the skills or knowledge from the learning activity to the job, the learning situation should simulate the actual job as closely as possible. Thus, employers may want to arrange the objectives and activities in a sequence which corresponds to the order in which the tasks are to be performed on the job, if a specific process is to be learned. For instance, if an employee must learn the beginning processes of using a machine, the sequence might be: **(1)** to check that the power source is connected; **(2)** to ensure that the safety devices are in place and are operative; **(3)** to know when and how to throw the switch; and so on.

A few factors will help to determine the type of learning activity to be incorporated into the training. One aspect is the training resources available to the employer. Can a group training program that uses an outside trainer and film be organized, or should the employer personally train the employees on a one-to-one basis? Another factor is the kind of skills or knowledge to be learned. Is the learning oriented toward physical skills (such as the use of special tools) or toward mental processes and attitudes? Such factors will influence the type of learning activity designed by employers. The training activity can be group-oriented, with lectures, role play, and demonstrations; or designed for the individual as with self-paced instruction.

The determination of methods and materials for the learning activity can be as varied as the employer's imagination and available resources will allow. The employer may want to use charts, diagrams, manuals, slides, films, viewgraphs (overhead transparencies), videotapes, audiotapes, or simply blackboard and chalk, or any combination of these and other instructional aids. Whatever the method of instruction, the learning activities should be developed in such a way that the employees can clearly demonstrate that they have acquired the desired skills or knowledge.

E. Conducting the Training

With the completion of the steps outlined above, the employer is ready to begin conducting the training. To the extent possible, the training should be presented so that its organization and meaning are clear to the employees. To do so, employers or supervisors should: **(1)** provide overviews of the material to be learned; **(2)** relate, wherever possible, the new information or skills to the employee's goals, interests, or experience; and **(3)** reinforce what the employees learned by summarizing the program's objectives and the key points of information covered. These steps will assist employers in presenting the training in a clear, unambiguous manner.

In addition to organizing the content, employers must also develop the structure and format of the training. The content developed for the program, the nature of the workplace or other training site, and the resources available for training will help employers determine for themselves the frequency of training activities, the length of the sessions, the instructional techniques, and the individual(s) best qualified to present the information.

In order to be motivated to pay attention and learn the material that the employer or supervisor is presenting, employees must be convinced of the importance and relevance of the material. Among the ways of developing motivation are: **(1)** explaining the goals and objectives of instruction; **(2)** relating the training to the interests, skills, and experiences of the employees; **(3)** outlining the main points to be presented during the training session(s); and **(4)** pointing out the benefits of training (e.g., the employee will be better informed, more skilled, and thus more valuable both on the job and on the labor market; or the employee will, if he or she applies the skills and knowledge learned, be able to work at reduced risk).

An effective training program allows employees to participate in the training process and to practice their skills or knowledge. This will help to ensure that they are learning the required knowledge or skills and permit correction if necessary. Employees can become involved in the training process by participating in discussions, asking questions, contributing their knowledge and expertise, learning through hands-on experiences, and through role-playing exercises.

F. Evaluating Program Effectiveness

To make sure that the training program is accomplishing its goals, an evaluation of the training can be valuable. Training should have, as one of its critical components, a method of measuring the effectiveness of the training. A plan for evaluating the training session(s), either written or thought-out by the employer, should be developed when the course objectives and content are developed. It should not be delayed until the training has been completed. Evaluation will help employers or supervisors determine the amount of learning achieved and whether an employee's performance has improved on the job. Among the methods of evaluating training are: **(1) Student opinion.** Questionnaires or informal discussions with employees can help employers determine the relevance and appropriateness of the training program; **(2) Supervisors' observations.** Supervisors are in good positions to observe an employee's performance both before and after the training and note improvements or changes; and **(3) Workplace improvements.** The ultimate success of a training program may be changes throughout the workplace that result in reduced injury or accident rates.

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However it is conducted, an evaluation of training can give employers the information necessary to decide whether or not the employees achieved the desired results, and whether the training session should be offered again at some future date.

G. Improving the Program

If, after evaluation, it is clear that the training did not give the employees the level of knowledge and skill that was expected, then it may be necessary to revise the training program or provide periodic retraining. At this point, asking questions of employees and of those who conducted the training may be of some help. Among the questions that could be asked are: **(1)** Were parts of the content already known and, therefore, unnecessary? **(2)** What material was confusing or distracting? **(3)** Was anything missing from the program? **(4)** What did the employees learn, and what did they fail to learn?

It may be necessary to repeat steps in the training process, that is, to return to the first steps and retrace one's way through the training process. As the program is evaluated, the employer should ask: **(1)** If a job analysis was conducted, was it accurate? **(2)** Was any critical feature of the job overlooked? **(3)** Were the important gaps in knowledge and skill included? **(4)** Was material already known by the employees intentionally omitted? **(5)** Were the instructional objectives presented clearly and concretely? **(6)** Did the objectives state the level of acceptable performance that was expected of employees? **(7)** Did the learning activity simulate the actual job? **(8)** Was the learning activity appropriate for the kinds of knowledge and skills required on the job? **(9)** When the training was presented, was the organization of the material and its meaning made clear? **(10)** Were the employees motivated to learn? **(11)** Were the employees allowed to participate actively in the training process? **(12)** Was the employer's evaluation of the program thorough?

A critical examination of the steps in the training process will help employers determine where course revision is necessary.

III. Matching Training to Employees

While all employees are entitled to know as much as possible about the safety and health hazards to which they are exposed, and employers should attempt to provide all relevant information and instruction to all employees, the resources for such an effort frequently are not, or are not believed to be, available. Thus, employers are often faced with the problem of deciding who is in the greatest need of information and instruction.

One way to differentiate between employees who have priority needs for training and those who do not is to identify employee populations which are at higher levels of risk. The nature of the work will provide an indication that such groups should receive priority for information on occupational safety and health risks.

A. Identifying Employees at Risk

One method of identifying employee populations at high levels of occupational risk (and thus in greater need of safety and health training) is to pinpoint hazardous occupations. Even within industries which are hazardous in general, there are some employees who operate at greater risk than others. In other cases the hazardousness of an occupation is influenced by the conditions under which it is performed, such as noise, heat or cold, or safety or health hazards in the surrounding area. In these situations, employees should be trained not only on

how to perform their job safely but also on how to operate within a hazardous environment.

A second method of identifying employee populations at high levels of risk is to examine the incidence of accidents and injuries, both within the company and within the industry. If employees in certain occupational categories are experiencing higher accident and injury rates than other employees, training may be one way to reduce that rate. In addition, thorough accident investigation can identify not only specific employees who could benefit from training but also identify company-wide training needs.

Research has identified the following variables as being related to a disproportionate share of injuries and illnesses at the worksite on the part of employees:

1. The age of the employee (younger employees have higher incidence rates).
2. The length of time on the job (new employees have higher incidence rates).
3. The size of the firm (in general terms, medium-size firms have higher incidence rates than smaller or larger firms).
4. The type of work performed (incidence and severity rates vary significantly by SIC Code).
5. The use of hazardous substances (by SIC Code).

These variables should be considered when identifying employee groups for training in occupational safety and health.

In summary, information is readily available to help employers identify which employees should receive safety and health information, education and training, and who should receive it before others. Employers can request assistance in obtaining information by contacting such organizations as OSHA Area Offices, the Bureau of Labor Statistics, OSHA approved State programs, State onsite consultation programs, the OSHA Office of Training and Education, or local safety councils.

B. Training Employees at Risk

Determining the content of training for employee populations at higher levels of risk is similar to determining what any employee needs to know, but more emphasis is placed on the requirements of the job and the possibility of injury. One useful tool for determining training content from job requirements is the Job Hazard Analysis described earlier. This procedure examines each step of a job, identifies existing or potential hazards, and determines the best way to perform the job in order to reduce or eliminate the hazards. Its key elements are: **(1)** job description; **(2)** job location; **(3)** key steps (preferably in the order in which they are performed); **(4)** tools, machines and materials used; **(5)** actual and potential safety and health hazards associated with these key job steps; and **(6)** safe and healthful practices, apparel, and equipment required for each job step.

Material Safety Data Sheets (MSDS) can also provide information for training employees in the safe use of materials. These data sheets, developed by chemical manufacturers and importers, are supplied with manufacturing or construction materials and describe the ingredients of a product, its hazards, protective equipment to be used, safe handling procedures, and emergency first-aid responses. The information contained in these sheets can help employers identify employees in need of training (i.e., workers handling substances described in the sheets) and train employees in safe use of the substances. Material Safety Data Sheets are generally available from suppliers, manufacturers of the substance, large employers who use the substance on a regular basis, or they can be developed by employers or trade

associations. MSDS are particularly useful for those employers who are developing training on chemical use as required by OSHA's Hazard Communication Standard.

IV. Conclusion

In an attempt to assist employers with their occupational health and safety training activities, OSHA has developed a set of training guidelines in the form of a model. This model is designed to help employers develop instructional programs as part of their total education and training effort. The model addresses the questions of who should be trained, on what topics, and for what purposes. It also helps employers determine how effective the program has been and enables them to identify employees who are in greatest need of education and training. The model is general enough to be used in any area of occupational safety and health training, and allows employers to determine for themselves the content and format of training. Use of this model in training activities is just one of many ways that employers can comply with the OSHA standards that relate to training and enhance the safety and health of their employees.

General Industry Training Requirements
29 CFR Part 1910

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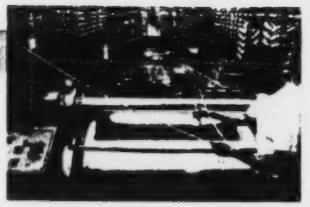

The following training requirements have been excerpted from *Title 29, Code of Federal Regulations Part 1910*. Note that additional training requirements may appear in certain other standards (ANSI, NFPA, etc.) adopted by reference in *Part 1910* and therefore mandatory.

Subject and Standard Number	Training Requirement
Employee Emergency Plans and Fire Prevention Plans 1910.38(a)(5)(i), (ii)(a) through (c) and (iii)	**(i)** Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees. **(ii)** The employer shall review the plan with each employee covered by the plan at the following times: **(a)** Initially when the plan is developed, **(b)** Whenever the employee's responsibilities or designated actions under the plan change, and **(c)** Whenever the plan is changed. **(iii)** The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan.
1910.38(b)(4)(i) and (ii)	**(i)** The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed. **(ii)** The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan.
Powered Platforms for Building Maintenance—Operations Training 1910.66(i), (ii) and (ii)(A) through (E), and (iii) through (v)	**(i)** Working platforms shall be operated only by persons who are proficient in the operation, safe use and inspection of the particular working platform to be operated. **(ii)** All employees who operate working platforms shall be trained in the following: **(A)** Recognition of, and preventive measures for, the safety hazards associated with their individual work tasks. **(B)** General recognition and prevention of safety hazards associated with the use of working platforms, including the provisions in the section relating to the particular working platform to be operated. **(C)** Emergency action plan procedures required in paragraph **(e)(9)** of this section. **(D)** Work procedures required in paragraph **(i)(1)(iv)** of this section. **(E)** Personal fall arrest system inspection, care, use and system performance.

(iii) Training of employees in the operation and inspection of working platforms shall be done by a competent person.

(iv) Written work procedures for the operation, safe use and inspection of working platforms shall be provided for employee training. Pictorial methods of instruction, may be used, in lieu of written work procedures, if employee communication is improved using this method. The operating manuals supplied by manufacturers for platform system components can serve as the basis for these procedures.

(v) The employer shall certify that employees have been trained in operating and inspecting a working platform by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training and the date that training was completed. The certification record shall be prepared at the completion of the training required in paragraph **(i)(1)(ii)** of this section, and shall be maintained in a file for the duration of the employee's employment. The certification record shall be kept readily available for review by the Assistant Secretary of Labor or the Assistant Secretary's representative.

Care and Use Appendix C, Sec. I(e)(9)

(9) Before using a personal fall arrest system, and after any component or system is changed, employees shall be trained in accordance with the requirements of paragraph **1910.66(i)(1)**, in the safe use of the system.

Dip Tanks—Personal Protection 1910.94(d)(9)(i)

(9) ***Personal protection.*** **(i)** All employees working in and around open-surface tank operations must be instructed as to the hazards of their respective jobs, and in the personal protection and procedures applicable to these hazards.

1910.94(d)(9)(vi)

(vi) Respirators shall be used in accordance with **§ 1910.134**, and persons who may require them shall be trained in their use.

Inspection, Maintenance and Installation 1910.94(d)(11)(v)

(v) If, in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators, such as self-contained breathing apparatus; hose mask with blower, if there is a possibility of oxygen deficiency; or a gas mask, selected and operated in accordance with paragraph **(d)(9)(vi)** of this section, shall be used. If a contaminant in the tank can cause dermatitis, or be absorbed through the skin, the employee entering the tank shall also wear protective clothing. At least one trained standby employee, with suitable respirator, shall be present in the nearest uncontaminated area. The standby employee must be able to communicate with the employee in the tank and be able to haul him out of the tank with a lifeline if necessary.

Hearing Protection 1910.95(i)(4)

(4) The employer shall provide training in the use and care of all hearing protectors provided to employees.

Training Program 1910.95(k)(1) through (3)(i) through (iii)

(1) The employer shall institute a training program for all employees who are exposed to noise at or above an 8-hour time weighted average of 85 decibels, and shall ensure employee participation in such program.

(2) The training program shall be repeated annually for each employee included in the hearing conservation program. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.

(3) The employer shall ensure that each employee is informed of the following:

(i) The effects of noise on hearing;

(ii) The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and

(iii) The purpose of audiometric testing, and an explanation of the test procedures.

Flammable and Combustible Liquids 1910.106(b)(5)(v)(2) and (3)

(2) That detailed printed instructions of what to do in flood emergencies are properly posted.

(3) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.

Explosive and Blasting Agents 1910.109(d)(3)(i) and (iii)

(i) Vehicles transporting explosives shall only be driven by and be in the charge of a driver who is familiar with the traffic regulations, State laws, and the provisions of this section.

(iii) Every motor vehicle transporting any quantity of Class A or Class B explosives shall, at all times, be attended by a driver or other attendant of the motor carrier. This attendant shall have been made aware of the class of the explosive material in the vehicle and of its inherent dangers, and shall have been instructed in the measures and procedures to be followed in order to protect the public from those dangers. He shall have been made familiar with the vehicle he is assigned, and shall be trained, supplied with the necessary means, and authorized to move the vehicle when required.

1910.109(g)(3)(iii)(a)

(iii)(a) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. The employer shall assure that the operator is familiar with the commodities being delivered and the general procedure for handling emergency situations.

1910.109(g)(6)(ii)

(ii) Vehicles transporting blasting agents shall only be driven by and be in charge of a driver in possession of a valid motor vehicle operator's license. Such a person shall also be familiar with the States vehicle and traffic laws.

Bulk Delivery and MixingVehicles 1910.109(h)(3)(d)(iii)

(iii) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. He shall be familiar with the commodities being delivered and the general procedure for handling emergency situations.

Storage and Handling of Liquefied Petroleum Gases 1910.110(b)(16) and 1910.110(d)(12)(i)

(16) Instructions. Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such functions.

(i) When standard watch service is provided, it shall be extended to the LP-Gas installation and personnel properly trained.

1910.111(b)(13)(ii)

(ii) The employer shall insure that unloading operations are performed by reliable persons properly instructed and given the authority to monitor careful compliance with all applicable procedures.

Process Safety Management of Highly Hazardous Chemicals 1910.119(g)(1)(i) and (ii)

(g) ***Training.*** **(1)** ***Initial training.*** **(i)** Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in paragraph **(f)** of this section. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

(ii) In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

1910.119(g)(2)

(2) ***Refresher training***. Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

1910.119(g)(3)

(3) ***Training documentation***. The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

Contract Employer Responsibilities 1910.119(h)(3)(i) through (iv)

(3) ***Contract employer responsibilities***. **(i)** The contract employer shall assure that each contract employee is trained in the work practices necessary to perform his/her job.

(ii) The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.

(iii) The contract employer shall document that each contract employee has received and understood the training required by this paragraph. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

(iv) The contract employer shall assure that each contract employee follows the safety rules of the facility including the safe work practices required by paragraph **(f)(4)** of this section.

Mechanical Integrity 1910.119(j)(3)

(3) ***Training for process maintenance activities***. The employer shall train each employee involved in maintaining the ongoing integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.

Hazardous Waste Operations and Emergency Response 1910.120(e)(1)(i) and (ii); (2)(i) through (vii); (3)(i) through (iv) and (4) through (9)

(e) ***Training*** **(1)** ***General*** **(i)** All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph.

(ii) Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

(2) ***Elements to be covered.*** The training shall thoroughly cover the following:

(i) Names of personnel and alternates responsible for site safety and health;

(ii) Safety, health and other hazards present on the site;

(iii) Use of personal protective equipment;

(iv) Work practices by which the employee can minimize risks from hazards;

(v) Safe use of engineering controls and equipment on the site;

(vi) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards; and

(vii) The contents of paragraphs **(G)** through **(J)** of the site safety and health plan set forth in paragraph **(b)(4)(ii)** of this section.

(3) ***Initial training.*** **(i)** General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

(ii) Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

(iii) Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

(iv) Workers with 24 hours of training who are covered by paragraphs **(e)(3)(ii)** and **(e)(3)(iii)** of this section, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified in paragraph **(e)(3)(i)(4).**

(4) ***Management and supervisor training.*** Onsite management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs **(e)(3)(ii)** and **(e)(3)(iii)** and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

(5) ***Qualifications for trainers.*** Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects

they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

(6) ***Training certification***. Employees and supervisors that have received and successfully completed the training and field experience specified in paragraphs **(e)(1)** through **(e)(4)** of this section shall be certified by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements of paragraph **(e)(9)** of this section shall be prohibited from engaging in hazardous waste operations.

(7) ***Emergency response***. Employees who are engaged in responding to hazardous emergency situations at hazardous waste cleanup sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.

(8) ***Refresher training***. Employees specified in paragraph **(e)(1)** of this section, and managers and supervisors specified in paragraph **(e)(4)** of this section, shall receive eight hours of refresher training annually on the items specified in paragraph **(e)(2)** and/or **(e)(4)** of this section, critiques of incidents that have occurred in the past year that can serve as training examples of any related work, and other relevant topics.

(9) ***Equivalent training***. Employers who can show by documentation or certification that an employee's work experience and/or training has resulted in training equivalent to that training required in paragraphs **(e)(1)** through **(e)(4)** of this section shall not be required to provide the initial training requirements of those paragraphs to such employees. However, certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

However, certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

Hazardous Waste Cleanup Workers 1910.120 Appendix C

2. ***Training***. The training program for employees subject to the requirements of paragraph **(e)** of this standard should address: the safety and health hazards employees should expect to find on hazardous waste clean up sites; what control measures or techniques are effective for those hazards; what monitoring procedures are effective in characterizing exposure levels; what makes an effective employer safety and health program; what a site safety and health plan should include; hands-on training with personal protective equiipment and clothing they may be expected to use; the contents of the OSHA standards relevant to the employee's duties and functions; and, employee's responsibilities under OSHA and other regulations.

New Technology Programs 1910.120(o)(i)

(i) The employer shall develop and implement procedures for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean up operations, and the same shall be implemented as part of the site safety and health program to assure that employee protection is being maintained.

Hazardous Waste Operations—Emergency Responders 1910.120(p)(8)(iii)(A) through (C)

(iii) ***Training.*** **(A)** Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.

Note: ***Exception #1***: An employer need not train all employees to the degree specified if the employer divided the work force in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first resond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Note: ***Exception #2***: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside, fully trained emergency response team for assistance.

(B) Employee members of TSD facility emergency response organizations shall be trained to a level of competnce in the reconition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to overexposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from overexposures.

(C) The employer shall certify that each covered employee has attended and successfully completed the training required in paragraph **(p)(8)(iii)** of this section, or shall certify the employee's competency at least yearly. The method used to demonstrate competency for certification of training shall be recorded and maintained by the employer.

1910.120(p)(7)(i) through (iii)

(i) ***New employees.*** The employer shall develop and implement a training program, which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not to endanger themselves or other employees. The initial training shall be for 24 hours and refresher training shall be for eight hours annually. Employees who have received the initial training required by this paragraph shall be given a written certificate attesting that they have successfully completed the necessary training.

(ii) *Current employees*. Employers who can show by an employee'sprevious work experience and/or training that the employee has had training equivalent to the initial training required by this paragraph, shall be considered as meeting the initial training requirements of this paragraph as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. Current employees shall receive eight hours of refresher training annually.

(iii) *Trainers.* Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the academic credentials and instruction experience necessary to demonstrate a good command of the subject matter of the courses and competent instructional skills.

1910.120(p)(8)(iii)(A)

(iii) *Training*. (A) Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn, and procedures for handling emergency incidents.

1910.120(q)(4)

(4) *Skilled support personnel*. Personnel, not necessarily an employer's own employees, who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this paragraph for the employer's regular employees. However, these personnel shall be given an initial briefing at the site prior to their participation in any emergency response. The initial briefing shall include instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees shall be used to assure the safety and health of these personnel.

1910.120(q)(5)

(5) *Specialist employees.* Employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge, shall receive training or demonstrate competency in the area of their specialization annually.

1910.120(q)(6)(i)(A) through (F); (iii)(A) Through I; (iv)(A) through (I); (v)(A) through (F)

(6) *Training*. Training shall be based on the duties and function to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate in emergency response, shall be given training in accordance with the following paragraphs:

(i) *First responder awareness level.* First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. First responders at the awareness

level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

(A) An understanding of what hazardous substances are, and the risks associated with them in an incident.

(B) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.

(C) The ability to recognize the presence of hazardous substances in an emergency.

(D) The ability to identify the hazardous substances, if possible.

(E) An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.

(F) The ability to realize the need for additional resources, and to make appropriate notifications to the communications center.

(ii) ***First responder operations level.*** First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

(A) Knowledge of the basic hazard and risk assessment techniques.

(B) Know how to select and use proper personal protective equipment provided to the first responder operational level

(C) An understanding of basic hazardous materials terms.

(D) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.

(E) Know how to implement basic decontamination procedures.

(F) An understanding of the relevant standard operating procedures and termination procedures.

(iii) ***Hazardous materials technician***. Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

(A) Know how to implement the employer's emergency response plan.

(C) Be able to function within an assigned role in the Incident Command System

(D) Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.

(E) Understand hazard and risk assessment techniques.

(F) Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.

(G) Understand and implement decontamination.

(H) Understand termination procedures.

(I) Understand basic chemical and toxicological terminology and behavior

(iv) ***Hazardous materials specialist.*** Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas and the employer shall so certify:

(A) Know how to implement the local emergency response plan.

(B) Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.

(C) Know of the state emergency response plan.

(D) Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.

(E) Understand in-depth hazard and risk techniques.

(F) Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.

(G) Be able to determine and implement decontamination procedures.

(H) Have the ability to develop a site safety and control plan.

(I) Understand chemical, radiological and toxicological terminology and behavior.

(v) ***On scene incident commander.*** Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

(A) Know and be able to implement the employer's incident command system.

(B) Know how to implement the employer's emergency response plan.

(C) Know and understand the hazards and risks associated with employees working in chemical protective clothing.

(D) Know how to implement the local emergency response plan.

(E) Know of the state emergency response plan and of the Federal Regional Response Team.

(F) Know and understand the importance of decontamination procedures.

1910.120(q)(7)

(7) ***Trainers.*** Trainers who teach any of the above training subjects shall have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they shall have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

Personal Protective Equipment 1910.132(f)(1)(i) through (v); (2), (3)(i) through (iii) and (4)

(f) ***Training***. **(1)** The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

(i) When PPE is necessary;

(ii) What PPE is necessary;

(iii) How to properly don, doff, adjust and wear PPE;

(iv) The limitations of the PPE; and,

(v) The proper care, maintenance, useful life, and disposal of the PPE.

(2) Each affected employee shall demonstrate an understanding of the training specified in paragraph **(f)(1)** of this section and the ability to use PPE properly before being allowed to perform work requiring the use of PPE.

(3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph **(f)(2)** of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(i) Changes in the workplace render previous training obsolete, or

(ii) Changes in the types of PPE to be used render previous training obsolete; or

(iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(4) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subnject of the certification.

Respiratory Protection 1910.134(k)(1)(i) through (vii); (2), (3), and (5)(i) through (iii)

(k) ***Training and information.*** **(1)** The employer shall ensure that each employee can demonstrate knowledge of at least the following:

(i) Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;

(ii) What the limitations and capabilities of the respirator are;

(iii) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;

(iv) How to inspect, put on and remove, use, and check the seals of the respirator;

(v) What the procedures are for maintenance and storage of the respirator;

(vi) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

vii) The general requirements of this section.

(2) Training shall be conducted in a manner that is understandable to the employee.

(3) The employer shall provide the training prior to requiring the employee to use a respirator in the workplace.

(5) Retraining shall be administered annually and when the following situations occur:

(i) Changes in the workplace or the type of respirator render previous training obsolete;

ii) Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or

(iii) Any other situation arises in which retraining appears necessary to ensure safe respirator use.

Respiratory Protection for M Tuberculosis 1910.139(a)(3) 1910.139(b)(3)

(3) The employee shall use the provided respiratory protection in accordance with instructions and training received.

(3) The user shall be instructed and trained in the proper use of respirators and their limitations.

1910.139(e)(2) through (4) and (5)(i)

(2) the correct respirator shall be specified for each job. The respirator type is usually specified in the work procedures by a qualified individual supervising the respiratory protective program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of issuance should be recorded.

(3) Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

(4) Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned, and maintained.

(5) For safe use of any respirator, it is essential that the user be properly instructed in its selection, use, and maintenance. Both supervisors and workers shall be so instructed by competent persons. Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face seal, wear it in normal air for a long familiarity period, and, finally, to wear it in a test atmosphere.

(i) Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a

facepiece. The worker's diligence in observing these factors shall be evaluated by periodic check. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by following the manufacturer's facepiece fitting instructions.

Temporary Labor Camps 1910.142(k)(1) and (2)

(1) Adequate first-aid facilities approved by a health authority shall be maintained and made available in every labor camp for the emergency treatment of injured persons.

(2) Such facilities shall be in charge of a person trained to administer first-aid and shall be readily accessible for use at all times.

Specifications for Accident Prevention Signs and Tags 1910.145(c)(1)(ii), (2)(ii) and (3)

(1)(ii) All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.

(2)(ii) All employees shall be instructed that caution signs indicate a possible hazard against which proper precautions should be taken.

(3) ***Safety instruction signs***. Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

Permit Required Confined Spaces 1910.146(g)(1) and (2)(i) through(iv)(3) and (4)and (k)(1)(i) through (iv)

(g) ***Training*** **(1)** The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.

(2) Training shall be provided to each affected employee:

(i) Before the employee is first assigned duties under this section;

(ii) Before there is a change in assigned duties;

(iii) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;

(iv) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by paragraph **(d)(3)** of this section or that there are inadequacies in the employees' knowledge or use of these procedures.

(3) The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section.

(4) The employer shall certify that the training required by paragraphs **(g)(1)** through **(g)(3)** of this section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

(k) ***Rescue and Emergency Services***. **(1)** The following requirements apply to employers who have employees enter permit required confined spaces to perform rescue services.

(i) The employer shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit required confined spaces.

(ii) Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under paragraph **(g)** of this section.

(iii) Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations

in which they remove dummies, mannekins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

(iv) Each member of the rescue service shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first-aid and in CPR shall be available.

The Control of Hazardous Energy (lockout/tagout) 1910.147(a)(3)(ii); (4)(i)(D); (7)(i)(A) through (C); (ii)(A) through (F); (iii)(A) through (C)(iv) and (8)

(ii) When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

(4) ***Energy control procedure.*** **(i)** Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

(D) Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph **(c)(7)(ii)** of this section.

(7) ***Training and communication.*** **(i)** The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are required by employees. The training shall include the following:

(A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

(B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(C) All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

(ii) When tagout systems are used, employees shall also be trained in the following limitations of tags:

(A) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

(B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person for it, and it is never to be bypassed, ignored, or otherwise defeated.

(C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

(D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

(E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(F) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

(iii) ***Employee retraining***. **(A)** Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.

(B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph **(c)(6)** of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the knowledge or use of the energy control procedures.

(C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

(iv) The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

(8) ***Energy isolation***. Implementation of lockout or the tagout system shall be performed only by authorized employees.

Lockout or Tagout Devices Removed 1910.147(e)(3)

(3) ***Lockout or tagout devices removal***. Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. ***Exception to paragraph (e)(3)***: When the authorized employee who applied the lock-out or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it.

Outside Personnel 1910.147(f)(2)(i)

(i) The on-site employer shall ensure that his/her personnel understand and comply with restrictions and prohibitions of the outside employer's energy control procedures.

Medical Services and First-Aid 1910.151(a) and (b)

(a) The employer shall ensure the ready availability of personnel for advice and consultation on matters of plant health.

(b) In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first-aid. First-aid supplies approved by the consulting physician shall be readily available.

Fire Protection 1910.155(c)(iv)(41)

(41) "Training" means the process of making proficient through instruction and hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used and in the performance of assigned duties.

Fire Brigades 1910.156(b)(1)

(b) ***Organization***—**(1)** ***Organizational statement***. The employer shall prepare and maintain a statement or written policy which establishes the existence of a fire brigade; the basic organizational structure; the type, amount, and frequency of training to be provided to fire brigade members; the expected number of members in the fire brigade; and the functions that the fire brigade is to perform at the workplace. The organizational statement shall be available for inspection by the Assistant Secretary and by employees or their designated representatives.

Training and Education 1910.156(c)(1) through (4)

(c) ***Training and education.*** **(1)** The employer shall provide training and education for all fire brigade members commensurate with those duties and functions that fire brigade members are expected to perform. Such training and education shall be provided to fire brigade members before they perform fire brigade emergency activities. Fire brigade leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general membership of the fire brigade.

(2) The employer shall assure that training and education is conducted frequently enough to assure that each member of the fire brigade is able to perform the member's assigned duties and functions satisfactorily and in a safe manner so as not to endanger fire brigade members or other employees. All fire brigade members shall be provided with training at least annually. In addition, fire brigade members who are expected to perform interior structural firefighting shall be provided with an education session or training at least quarterly.

(3) The quality of the training and education program for fire brigade members shall be similar to those conducted by such fire training schools as the Maryland Fire and Rescue Institute; Iowa Fire Service Extension; West Virginia Fire Service Extension; Georgia Fire Academy; New York State Department, Fire Prevention and Control; Louisiana State University Firemen Training Program; or Washington State's Fire Service, Training Commission for Vocational Education. (for example, for the oil refinery industry, with its unique hazards, the training and education program for those fire brigade members shall be similar to those conducted by Texas A & M University, Lamar University, Reno Fire School, or the Delaware State Fire School).

(4) The employer shall inform fire brigade members about special hazards such as storage and use of flammable liquids and gases, toxic chemicals, radioactive sources, and water reactive substances, to which they may be exposed during fire and other emergencies. The fire brigade members shall also be advised of any changes that occur in relation to the special hazards. The employer shall develop and make available for inspection by fire brigade members, written procedures that describe the actions to be taken in situations involving the special hazards and shall include these in the training and education program.

Portable fire Extinguishers 1910.157(g)(1), (2), and (4)

(g) ***Training and education.*** **(1)** Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting.

(2) The employer shall provide the education required in paragraph **(g)(1)** of this section upon initial employment and at least annually thereafter.

(4) The employer shall provide the training required in paragraph **(g)(3)** of this section upon initial assignment to the designated group of employees and at least annually thereafter.

1910.158(e)(2)(vi)

(vi) The employer shall designate trained persons to conduct all inspections required under this section.

Fixed Extinguishing Systems 1910.160(b)(10)

(10) The employer shall train employees designated to inspect, maintain, operate, or repair fixed extinguishing systems and annually review their training to keep them up-to-date in the functions they are to perform.

Fire Detection Systems 1910.164(c)(4)

(4) The employer shall assure that the servicing, maintenance and testing of fire detection systems, including cleaning and necessary sensitivity adjustments, are performed by a trained person knowledgeable in the operations and functions of the system.

Employee Alarm Systems 1910.165(d)(5)

(d) ***Maintenance and testing.*** **(5)** The employer shall assure that the servicing, maintenance, and testing of employee alarms are done by persons trained in the designed operation and functions necessary for reliable and safe operation of the system.

Servicing of Multi-Piece and Single-Piece Rim Wheels 1910.177(c)(1)(i) through (iii); (2)(i) through (viii) and (3) Includes single piece wheels per Federal Register of February 3, 1984 (pp. 4338-4352) but not automobile or truck tires marked "LT."

(c) ***Employee training.*** **(1)** The employer shall provide a training program to train all employees who service rim wheels in the hazards involved in servicing those rim wheels and the safety procedures to be followed.

(i) The employer shall assure that no employee services any rim wheel unless the employee has been trained and instructed in correct procedures of servicing the rim type being serviced, and in procedures described in paragraphs **(f)** and **(g)** of this section.

(ii) Information to be used in the training program shall include at a minimum, the applicable data contained in the charts, rim manuals, and the contents of this standard.

(iii) Where an employer knows or has reason to believe that any of his employees is unable to read and understand the charts or rim manual, the employer shall assure that the employee is instructed concerning the contents of the charts and rim manual in a manner which the employee is able to understand.

(2) The employer shall assure that each employee demonstrates and maintains the ability to service multi-piece rim wheels safely, including performance of the following tasks:

(i) Demounting of tires (including deflation);

(ii) Inspection and identification of rim wheel components;

(iii) Mounting of tires (including inflation within a restraining device or other safeguards required by this section);

(iv) Use of the restraining device or barrier, and other equipment required by this section;

(v) Handling of rim wheels;

(vi) Inflation of tire when a single piece rim wheel is mounted on a vehicle;

(vii) An understanding of the necessity of standing outside the trajectory both during the inflation of the tire and during inspection of the rim wheel following inflation; and

(viii) Installation and removal of rim wheels.

(3) The employer shall evaluate each employee's ability to perform these tasks and to service rim wheels safely and shall provide additional training as necessary to assure that each employee maintains his or her proficiency.

1910.177(f)(1); (2)(i) and (ii) and (3) through (11)

(f) ***Safe operating procedure—multi-piece rim wheels.*** The employer shall establish a safe operating procedure for servicing multi-piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements:

(1) Tires shall be completely deflated before demounting by removal of the valve core.

(2) Tires shall be completely deflated by removing the valve core before a rim wheel is removed from the axle in either of the following situations:

(i) When the tire has been driven underinflated at 80% or less of its recommended pressure, or

(ii) When there is obvious or suspected damage to the tire or wheel components.

(3) Rubber lubricant shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire, unless the tire or wheel manufacturer recommends against it.

(4) If a tire on a vehicle is underinflated but has more than 80% of the recommended pressure, the tire may be inflated while the rim wheel is on the vehicle provided remote control inflation equipment is used, and no employees remain in the trajectory during inflation.

(5) Tires shall be inflated outside a restraining device only to a pressure sufficient to force the tire bead onto the rim ledge and create an airtight seal with the tire and bead.

(6) Whenever a rim wheel is in a restraining device the employee shall not rest or lean any part of his body or equipment on or against the restraining device.

(7) After tire inflation, the tire and wheel components shall be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment to the tire or wheel components is necessary, the tire shall be deflated by removal of the valve core before the adjustment is made.

(8) No attempt shall be made to correct the seating of side and lock rings by hammering, striking or forcing the components while the tire is pressurized.

(9) Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated.

(10) Whenever multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless the employer can demonstrate that performance of the servicing makes the employee's presence in the trajectory necessary.

(11) No heat shall be applied to a multi-piece wheel or wheel component.

1910.177(g)(1) through (12)

(g) ***Safe operating procedure—single piece rim wheels***. The employer shall establish a safe operating procedure for servicing single piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements:

(1) Tires shall be completely deflated by removal of the valve core before demounting.

(2) Mounting and demounting of the tire shall be done only from the narrow ledge side of the wheel. Care shall be taken to avoid damaging the tire beads while mounting tires on wheels. Tires shall be mounted only on compatible wheels of matching bead diameter and width.

(3) Nonflammable rubber lubricant shall be applied to bead and wheel mating surfaces before assembly of the rim wheel, unless the tire or wheel manufacturer recommends against the use of any rubber lubricant.

(4) If a tire changing machine is used, the tire shall be inflated only to the minimum pressure necessary to force the tire bead onto the rim ledge while on the tire changing machine.

(5) If a bead expander is used, it shall be removed before the valve core installed and as soon as the rim wheel becomes airtight (the tire bead slips onto the bead seat).

(6) Tires may be inflated only when contained within a restraining device, positioned behind a barrier or bolted on the vehicle with the lug nuts fully tightened.

(7) Tires shall not be inflated when any flat, solid surface is in the trajectory and within one foot of the sidewall.

(8) Employees shall stay out of the trajectory when inflating a tire.

(9) Tires shall not be inflated to more than the inflation pressure stamped in the sidewall unless a higher pressure is recommended by the manufacturer.

(10) Tires shall not be inflated above the maximum pressure recommended by the manufacturer to seat the tire bead firmly against the rim flange.

(11) No heat shall be applied to a single piece wheel.

(12) Cracked, broken, bent, or otherwise damaged wheels shall not be reworked, welded, brazed, or otherwise heated.

Powered Industrial Trucks
1910.178(1)

(l) ***Operator training***. Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks.

Moving the Load
1910.179(n)(3)(ix)

(ix) When two or more cranes are used to lift a load, one qualified responsible person shall be in charge of the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

1910.179(o)(3)

(3) ***Fire extinguishers***. The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.

Crawler Locomotives and Truck Cranes
1910.180(i)(5)(ii)

(ii) Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

Mechanical Power Presses
1910.217(e)(3)

(3) ***Training of maintenance personnel***. It shall be the responsibility of the employer to insure the original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

1910.217(f)(2)

(2) ***Instruction to operators.*** The employer shall train and instruct the operator in the safe method of work before starting work on any operation covered by this section. The employer shall insure by adequate supervision that correct operating procedures are being followed.

Mechanical Power Presses—Instructions to Operators
1910.217(e)(2)

(2) ***Instruction to operators.*** The employer shall train and instruct the operator in the safe method of work before starting work on any operation covered by this section. The employer shall insure by adequate supervision that correct operating procedures are being followed.

Training of Maintenance personnel
1910.217(e)(3)

(3) ***Training of Maintenance personnel.*** It shall be responsibility of the employer to insure the original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

Operator Training
1910.217(H)(13)(i)(A) through (E) and (ii)

(i) The operator training required by paragraph **(f)(2)** of this section shall be provided to the employee before the employee initially operates the press and as needed to maintain competence, but not less than annually thereafter. It shall include instruction relative to the following items for presses used in the PSDI mode:

(A) The manufacturer's recommended test procedures for checking operation of the presence sensing device. This shall include the use of the test rod required by paragraph **(h)(10)(i)** of this section.

(B) The safety distance required.

(C) The operation, function and performance of the PSDI mode.

(D) The requirements for hand tools that may be used in the PSDI mode.

(E) The severe consequences that can result if he or she attempts to circumvent or bypass any of the safeguard or operating functions of the PSDI system.

(ii) The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person or the person who conducted the training, and the date the training was completed. The certification record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment. The certification record shall be made available upon request to the Assistant Secretary for Occupational Safety and Health.

Forging Machines
1910.218(a)(2)(iii)

(2) ***Inspection and maintenance***. It shall be the responsibility of the employer to maintain all forge shop equipment in a condition which will ensure continued safe operation. This responsibility includes:

(iii) Training personnel for the proper inspection and maintenance of forging machinery and equipment.

Welding, Cutting, and Brazing—General Requirements
1910.252(a)(2)(xiii)(C)

(xiii) ***Management.*** Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

(C) Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

Oxygen—Fuel Gas Welding and Cutting
1910.253(a)(4)

(4) ***Personnel***. Workmen in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

Arc Welding and Cutting
1910.254(a)(3)

(3) ***Instruction***. Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified in paragraph **(d)** of this section.

Resistance Welding
1910.255(a)(3)

(3) ***Personnel***. Workmen designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.

Pulp, Paper, and Paperboard Mills
1910.261(h)(3)(ii)

(ii) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

Laundry Machinery and Operating Rules 1910.264(d)(1)(v)

Sawmills 1910.265(c)(3)(x)

Logging 1910.266(i)(1) and (2)(i) through (iv); (3)(i) through (vi); (4) and (5)(i) through (iv); (6) and (7)(i) through (iii); (8) and (9)

(v) ***Instruction of employees***. Employees shall be properly instructed as to the hazards of their work and be instructed in safe practices, by bulletins, printed rules, and verbal instructions.

(x) ***Lift trucks***. Lift trucks shall be designed, constructed, maintained, and operated in accordance with the requirements of **1910.178**.

(i)*Training.* **(1)** The employer shall provide training for each employee, including supervisors, at no cost to the employee.

(2) ***Frequency.*** Training shall be provided as follows:

(i) As soon as possible but not later than the effective date of this section for initial training for each current and new employee;

(ii) Prior to initial assignment for each new employee;

(iii) Whenever the employee is assigned new work tasks, tools, equipment, machines, or vehicles; and,

(iv) Whenever an employee demonstrates unsafe job performance.

(3) ***Content***. At a minimum, training shall consist of the following elements:

(i) Safe performance of assigned work tasks;

(ii) Safe use, operation, and maintenance of tools, machines, and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's instructions, warnings, and precautions;

(iii) Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards;

(iv) Recognition, prevention, and control of other safety and health hazards in the logging industry;

(v) Procedures, practices, and requirements of the employer's work site; and

(vi) The requirements of this standard.

(4) Training of an employee due to unsafe job performance, or assignment of new work tasks, tools, equipment, machines, or vehicles may be limited to those elements in paragraph **(I)(3)** of this section which are relevant to the circumstances giving rise to the need for training.

(5) ***Portability of training***. **(i)** Each current employee who has received training in the particular elements specified in paragraph **(i)(3)** of this section shall not be required to be retrained in those elements.

(ii) Each new employee who has received training in the particular elements specified in paragraph **(i)(3)** of this section shall not be required to be retrained in those elements prior to initial assignment.

(iii) The employer shall train each current and new employee in those elements for which the employee has not received training.

(iv) The employer is responsible for ensuring that each current and new employee can properly and safely perform the work tasks and operate the tools, equipment, machines, and vehicles used in their job.

(6) Each new employee and each employee who is required to be trained as specified in paragraph **(i)(2)** of this section, shall work under the close supervision of a designated person until the employee demonstrates to the employer the ability to safely perform the new duties independently.

(7) ***First-aid training***. **(i)** The employer shall assure that each employee, including supervisors, receives or has received first-aid and CPR training meeting at least the requirements specified in **Appendix B** of this standard.

(ii) The employer shall assure that each employee receives first-aid training at least every three years and receives CPR training at least annually.

(iii) The employer shall assure that each employee's first-aid and CPR training and/or certificate of training remain current.

(8) All training shall be conducted by a designated person.

(9) The employer shall assure that all training required by this section is presented in a manner that the employee is able to understand. The employer shall assure that all training materials used are appropriate in content and vocabulary to the educational level, literacy, and language skills of the employees being trained.

Telecommunications
1910.268(b)(2)(i)

(i) Employees assigned to work with storage batteries shall be instructed in emergency procedures such as dealing with accidental acid spills.

1910.268(c)(1) through (3)

(c) ***Training***. Employers shall provide training in the various precautions and safe practices described in this section and shall insure that employees do not engage in the activities to which this section applies until such employees have received proper training in the various precautions and safe practices required by this section. However, where the employer can demonstrate that an employee is already trained in the precautions and safe practices required by this section prior to his employment, training need not be provided to that employee in accordance with this section. Where training is required, it shall consist of on-the-job training or classroom-type training or a combination of both. The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed. The certification record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment. The certification record shall be made available upon request to the Assistant Secretary for Occupational Safety and Health. Such training shall, where appropriate, include the following subjects:

(1) Recognition and avoidance of dangers relating to encounters with harmful substances and animal, insect, or plant life;

(2) Procedures to be followed in emergency situations; and,

(3) First-aid training, including instruction in artificial respiration.

Derrick Trucks
1910.268(j)(4)(iv)(D)

(D) Only persons trained in the operation of the derrick shall be permitted to operate the derrick

Cable Fault Locating
1910.268(l)(1)

(l) ***Cable fault locating and testing***. **(1)** Employees involved in using high voltages to locate trouble or test cables shall be instructed in the precautions necessary for their own safety and the safety of other employees.

Guarding Manholes
1910.268(o)(1)(ii)

(ii) While work is being performed in the manhole, a person with basic first-aid training shall be immediately available to render assistance if there is cause for believing that a safety hazard exists, and if the requirements contained in paragraphs **(d)(1)** and **(o)(1)(i)** of this section do not adequately protect the employee(s).

Joint Power and Telecommunication Manholes 1910.268(o)(3)

(3) ***Joint power and telecommunication manholes.*** While work is being performed in a manhole occupied jointly by an electric utility and a telecommunication utility, an employee with basic first-aid training shall be available in the immediate vicinity to render emergency assistance as may be required. The employee whose presence is required in the immediate vicinity for the purposes of rendering emergency assistance is not to be precluded from occasionally entering a manhole to provide assistance other than in an emergency. The requirement of this paragraph **(o)(3)** does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

Tree Trimming—Electrical Hazards 1910.268(q)(1)(ii)(A) through (D)

(ii) Employees engaged in line clearing operations shall be instructed that:

(A) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.

(B) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.

(C) An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.

(D) Electric shock will occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

1910.268(q)(2)(ii)

(ii) Only qualified employees or trainees, familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.

1910.268(q)(2)(iii)

(iii) During all tree working operations aloft where an electrical hazard of more than 750V exists, there shall be a second employee or trainee qualified in line clearance tree trimming within normal voice communication.

Electric Power Generation, Transmission, and Distribution 1910.269(b)(1)(i) and (ii); (d)(vi)(A) through (C); (vii); (viii)(A) through (C); and (ix)

(b) ***Medical services and first-aid.*** The employer shall provide medical services and first-aid as required in **Section 1910.151** of this part. In addition to the requirements of **Section 1910.151** of the Part, the following requirements also apply:

(1) ***Cardiopulmonary resuscitation and first-aid training.*** When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first-aid including cardiopulmonary resuscitation (CPR) shall be available as follows:

(i) For field work involving two or more employees at a work location, at least two trained persons shall be available. However, only one trained person need be available if all new employees are trained in first-aid, including CPR, within 3 months of their hiring dates.

(ii) For fixed work locations such as generating stations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.

(d) ***Hazardous energy control (lockout/tagout) procedures.*** **(vi)** The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:

(A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.

(B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(C) All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

(vii) When tagout systems are used, employees shall also be trained in the limitation of tags.

(viii) Retraining shall be provided by the employer as follows:

(A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.

(B) Retraining shall also be conducted whenever a periodic inspection under paragraph **(d)(2)(v)** of this section reveals, or whenever the employer has reason to believe, there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.

(C) The retraining shall reestablish employee proficiency and shall introduce new or revised control methods and procedures, as necessary.

Grain Handling Facilities 1910.272(e)(1)(i) and (ii) and (2)

(e) ***Training.*** **(1)** The employer shall provide training to employees at least annually and when changes in job assignment will expose them to new hazards. Current employees, and new employees prior to starting work, shall be trained in at least the following:

(i) General safety precautions associated with the facility, including recognition and preventive measures for the hazards related to dust accumulations and common ignition sources such as smoking; and

(ii) Specific procedures and safety practices applicable to their job tasks including but not limited to, cleaning procedures for grinding equipment, clearing procedures for choked legs, housekeeping procedures, hot work procedures, preventive maintenance procedures and lock-out/tag-out procedures.

(2) Employees assigned special tasks, such as bin entry and handling of flammable or toxic substances, shall be provided training to perform these tasks safely.

Entry into Bins, Silos, and Tanks 1910.272(g)(5)

(5) The employee acting as observer shall be trained in rescue procedures, including notification methods for obtaining additional assistance.

Contractors 1910.272(h)(2)

(2) The employer shall explain the applicable provisions of the emergency action plan to contractors.

Content of Training 1910.332(b)(1)

(b) ***Content of training.*** **(1)** ***Practices addressed in this standard.*** Employees shall be required by **§§1910.331** through **1910.335** that pertain to their respective job assignments.

Qualifications of Dive Team 1910.410(a)(1); (2)(i) through (iii); (3) and (4)

(1) Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.

(2) Each dive team member shall have experience or training in the following:

(i) The use of tools, equipment, and systems relevant to assigned tasks;

(ii) Techniques of the assigned diving mode; and

(iii) Diving operations and emergency procedures.

(3) All dive team members shall be trained in cardiopulmonary resuscitation and first-aid (American Red Cross standard course or equivalent).

(4) Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving related physics and physiology.

1910.410(b)(1)

(1) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

1910.410(c)(2)

(2) The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

Asbestos 1910.1001(j)(7)(i) through (iii)(A) through (H)

(j) ***Communication of hazards to employees.*** **(7)** ***Employee information and training.*** **(i)** The employer shall institute a training program for all employees who are exposed to airborne concentrations of asbestos, tremolite, anthophylite, actinolite, or a combination of these minerals at or above the action level and ensure their participation in the program.

(ii) Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.

(iii) The training program shall be conducted in a manner which the employee is able to understand. The employer shall ensure that each employee is informed of the following:

(A) The health effects associated with asbestos exposure;

(B) The relationship between smoking and exposure;

(C) The quantity, location, manner of use, release, and specific nature of operations which could result in exposure to asbestos;

(D) The engineering controls and work practices associated with the employee's job assignment;

(E) The specific procedures implemented to protect employees from exposure to asbestos, such as appropriate work practices, emergency and clean-up procedures, and personal protective equipment to be used;

(F) The purpose, proper use, and limitations of respirators and protective clothing;

(G) The purpose and a description of the medical surveillance program required by paragraph **(I)** of this section;

(H) The content of this standard.

4-Nitrobiphenyl
1910.1003(e)(5)(i)(a) through (h)(i) and (ii)

Alpha-Napthylamine
1910.1004(e)(5)(i)(a) through (h)(i) and (ii)

Methyl Chloromethyl Ether
1910.1006(e)(5)(i)(a) through (h)(i) and (ii)

3,3'-Dichlorobenzidine (and its salts)
1910.1007(e)(5)(i)(a) through (h)(i) and (ii)

Bis-Chloromethyl Ether
1910.1008(e)(5)(i)(a) through (h)(i) and (ii)

Beta-Naphthylamine
1910.1009(e)(5)(i)(a) through (h)(i) and (ii)

Benzidine
1910.1010(e)(5)(i)(a) through (h)(i) and (ii)

4-Aminodiphenyl
1910.1011(e)(5)(i)(a) through (h)(i) and (ii)

Ethyleneimine
1910.1012(e)(5)(i)(a) through (h)(i) and (ii)

Beta-Propiolactone
1910.1013(e)(5)(i)(a) through (h)(i) and (ii)

2-Acetylaminofluorene
1910.1014(e)(5)(i)(a) through (h)(i) and (ii)

4-Dimethylaminoazo-benzene
1910.1015(e)(5)(i)(a) through (h)(i) and (ii)

N-Nitrosodimethyl-amine
1910.1016(e)(5)(i) (a) through (h)(i) and (ii)

(i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of N-Nitrobiphenyl, and others listed at left, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Nitrobiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Nitrobiphenyl;

(h) The purpose for and application of specific first-aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

Vinyl Chloride 1910.1017(j)(1)(i) through (ix)

(j) ***Training.*** Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

(1) The program shall include:

(i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;

(ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;

(iii) The purpose for, proper use of, and limitations of respiratory protective devices;

(iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;

(v) The purpose for and a description of the monitoring program;

(vi) The purpose for, and a description of, the medical surveillance program;

(vii) Emergency procedures;

(viii) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and

(ix) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

Inorganic Arsenic 1910.1018(o)(1)(i) and (ii)(A) through (F) and (2)(i) and (ii)

(1) ***Training program.*** **(i)** The employer shall institute a training program for all employees who are subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is a possibility of skin or eye irritation from inorganic arsenic. The employer shall assure that those employees participate in the training program.

(ii) The training program shall be provided by October 1, 1978, for employees covered by this provision, at the time of initial assignment for those subsequently covered by this provision, and shall be repeated at least quarterly for employees who have optional use of respirators and at least annually for other covered employees thereafter, and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendix A;

(B) The quantity, location, manner of use, storage, sources of exposure, and the specific nature of operations which could result in exposure to inorganic arsenic as well as any necessary protective steps;

(C) The purpose, proper use, and limitations of respirators;

(D) The purpose and a description of the medical surveillance program as required by paragraph **(n)** of this section;

(E) The engineering controls and work practices associated with the employee's job assignment; and

(F) A review of this standard.

(2) ***Access to training materials.*** **(i)** The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

Lead
1910.1025(l)(1)(i) through (v)(A) through (G)(2)(i) through (iii)

(i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendices **A** and **B** of this regulation.

(ii) The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists.

(iii) The employer shall provide initial training by 180 days from the effective date. **Editor's Note**: OSHA's lead standard became effective February 1, 1979 for those employees covered by paragraph **(l)(1)(ii)** on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this paragraph.

(iv) The training program shall be repeated at least annually for each employee.

(v) The employer shall assure that each employee is informed of the following:

(A) The content of this standard and its appendices;

(B) The specific nature of the operations which could result in exposure to lead above the action level;

(C) The purpose, proper selection, fitting, use, and limitations of respirators;

(D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females).

(E) The engineering controls and work practices associated with the employee's job assignment;

(F) The contents of any compliance plan in effect; and

(G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician;

(2) Access to information and training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

(iii) In addition to the information required by paragraph **(l)(1)(v)**, the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the *Occupational Safety and Health Act*, the regulations issued pursuant to that Act, and this lead standard, which are made available to the employer by the Assistant Secretary.

Cadmium
1910.1027(m)(4)(i) through (iii) (A) through (H) and (m)(4)(iv)(A) and (B)

(4) ***Employee information and training***. **(i)** The employer shall institute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such a program.

(ii) Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

(iii) The employer shall make the training program understandable to the employee and assure that each employee is informed of the following:

(A) The health hazards associated with cadmium exposure, with special attention to the information incorporated in appendix **A** of the standard;

(B) The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the permissible exposure limits (PELs);

(C) The engineering and work practices associated with the employee's job assignment;

(D) The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

(E) The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing;

(F) The purpose and a description of the medical surveillance program required by paragraph **(l)** of the standard's training section;

(G) The contents of the training section and the appendices of the cadmium standard;

(H) The employees' rights of access to records under the Access to Employee Exposure and Medical Records rule, **29 CFR 1910.20.**

(m)(4)(iv) Additional access to information and training programs and materials.

(A) The employer shall make a copy of this section and its appendices readily available without cost to all affected employees and shall provide a copy if requested.

(B) The employer shall provide to the Assistant Secretary or the Director, upon request, all materials relating to the employee information program.

Benzene
1910.1028(j)(3)(i) through (iii)(A) and (B)

(3) ***Information and training***. **(i)** The employer shall provide employees with information and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with information and training at least annually thereafter.

(ii) The training program shall be in accordance with the requirements of **29 CFR 1910.1200(h)(1)** and **(2)**, and shall include specific information on benzene for each category of information included in that section.

(iii) In addition to the information required under **29 CFR 1910.1200**, the employer shall:

(A) Provide employees with an explanation of the contents of this section, including **Appendices A** and **B,** and indicate to them where the standard is available; and,

(B) Describe the medical surveillance program required under paragraph **(i)** of this section, and explain the information contained in **Appendix C**.

Coke Oven Emissions 1910.1029(k)(1)(i) through (iv)(a) through (e) and (k)(2)(i) and (ii)

(1) ***Training program***. **(i)** The employer shall institute a training program for employees who are employed in the regulated area and shall assure their participation.

(ii) The training program shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area.

(iii) The training program shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

(iv) The training program shall include informing each employee of:

(a) The information contained in the substance information sheet for coke oven emissions (**Appendix A**);

(b) The purpose, proper use, and limitations of respiratory protective devices required in accordance with paragraph **(g)** of this section;

(c) The purpose for and a description of the medical surveillance program required by paragraph **(j)** of this section including information on the occupational safety and health hazards associated with exposure to coke oven emissions;

(d) A review of all written procedures and schedules required under paragraph **(f)** of this section; and

(e) A review of this standard.

(2) ***Access to training materials***. **(i)** The employer shall make a copy of this standard and its appendices readily available to all employees who are employed in the regulated area.

(ii) The employer shall provide upon request all materials relating to the employee information and training program to the Secretary and the Director.

Bloodborne Pathogens 1910.1030(g)(2)(i); (ii)(A) through (C); (iii) through (vii)(A) through (N); (viii) and (ix)(A) through (C)

(2) ***Information and Training***. **(i)** Employers shall ensure that all employees with occupational exposure participate in a training program which must be provided at no cost to the employee and during working hours.

(ii) Training shall be provided as follows:

(A) At the time of initial assignment to tasks where occupational exposure may take place;

(B) Within 90 days after the effective date of the standard; and

(C) At least annually thereafter.

(iii) For employees who have received training on bloodborne pathogens in the year preceding the effective date of the standard, only training with respect to the provisions of the standard which were not included need be provided.

(iv) Annual training for all employees shall be provided within one year of their previous training.

(v) Employers shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

(vi) Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

(vii) The training program shall contain at a minimum the following elements:

(A) An accessible copy of the regulatory text of this standard and an explanation of its contents;

(B) A general explanation of the epidemiology and symptoms of bloodborne diseases;

(C) An explanation of the modes of transmission of bloodborne pathogens;

(D) An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan;

(E) An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;

(F) An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;

(G) Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment;

(H) An explanation of the basis for selection of personal protective equipment;

(I) Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;

(J) Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;

(K) An explanation of the procedures to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;

(L) Information on the post exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident;

(M) An explanation of the signs and labels and/or color coding required by paragraph **(g)(1)**; and

(N) An opportunity for interactive questions and answers with the person conducting the training session.

(viii) The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

(ix) Additional initial training for employees in HIV and HBV laboratories and production facilities. Employees in HIV or HBV research laboratories and HIV or HBV production facilities shall receive the following intiial training in addition to the above training requirements:

(A) The employer shall assure that employees demonstrate proficiency in standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to work with HIV or HBV.

(B) The employer shall assure that employees have prior experience in the handling of human pathogens or tissue cultures before working with HIV or HBV.

(C) The employer shall provide a training program to employees who have no prior experience in handling human pathogens. Initial work activities shall not include the handling of infectious agents. A progression of work activities shall be assigned as techniques are learned and proficiency is developed. The employer shall assure that employees participate in work activities involving infectious agents only after proficiency has been demonstrated.

Cotton Dust 1910.1043(i)(1)(i)(A) through (F) and (2)(i) and (ii)

(i) ***Employee education and training***. **(1)** ***Training program.*** **(i)** The employer shall provide a training program for all employees exposed to cotton dust and shall assure that each employee is informed of thefollowing:

(A) The acute and long term health hazards associated with exposure to cotton dust;

(B) The names and descriptions of jobs and processes which could result in exposure to cotton dust at or above the permissible exposure levels; measures, including work practices required by paragraph **(g)** of the standard, necessary to protect the employee from exposures in excess of the permissible exposure limit;

(C) The measures, including work practices required by paragraph **(g)** of the standard, necessary to protect the employee from exposures in excess of the permissible exposure limit;

(D) The purpose, proper use and limitations of respirators required by paragraph **(f)** of the standard;

(E) The purpose for and a description of the medical surveillance program required by paragraph **(h)** of the standard and other information which will aid exposed employees in understanding the hazards of cotton dust exposure; and

(F) The contents of the standard and its appendices.

(ii) The training program shall be provided prior to initial assignment and shall be repeated annually for each employee exposed to cotton dust, when job assignments or work processes change, and when employee performance indicates a need for retraining.

(2) ***Access to training materials***. **(i)** Each employer shall post a copy of this section with its appendices in a public location at the workplace, and shall, upon request, make copies available to employees.

(ii) The employer shall provide all materials relating to the employee training and information program to the Assistant Secretary and the Director upon request.

1,2-Dibromo-3-Chloro-propane 1910.1044(n)(1)(i) and (ii)(a) through (e) and (n)(2)(i) and (ii)

(1) ***Training program***. **(i)** The employer shall institute a training program for all employees who may be exposed to DBCP and shall assure their participation in such a training program.

(ii) The employer shall assure that each employee is informed of the following:

(a) The information contained in **Appendix A**.

(b) The quantity, location, manner of use, release or storage of DBCP and the specific nature of operations which could result in exposure to DBCP as well as any necessary protective steps;

(c) The purpose, proper use, and limitations of respirators;

(d) The purpose and description of the medical surveillance program required by paragraph **(m)** of this section; and

(e) A review of this standard, including appendices.

(2) ***Access to training materials.*** **(i)** The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

Acrylonitrile (Vinyl Cyanide) 1910.1045(o)(1) and (iii)(A) through (G) and (2)(i) and (ii)

(1) ***Training program.*** **(i)** By January 2, 1979, the employer shall institute a training program for and assure the participation of all employees exposed to AN above the action level, all employees whose exposures are maintained below the action level by engineering and work practice controls, and all employees subject to potential skin or eye contact with liquid AN.

(ii) Training shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter, and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendices **A** and **B**. **Editor's Note**: See *Federal Register*, Vol. 43, No. 192, Oct. 3, 1978, pp. 45813-45815;

(B) The quantity, location, manner of use, release, or storage of AN, and the specific nature of operations which could result in exposure to AN, as well as any necessary protective steps;

(C) The purpose, proper use, and limitations of respirators and protective clothing;

(D) The purpose and a description of the medical surveillance program required by paragraph **(n)** of this section;

(E) The emergency procedures developed, as required by paragraph **(i)** of this section;

(F) Engineering and work practice controls, their function, and the employee's relationship to these controls; and

(G) A review of this standard.

(2) ***Access to training materials.*** **(i)** The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

Ethylene Oxide 1910.1047(j)(3)(i); (ii)(A) through (D) and (iii)(A) through (D)

(3) ***Information and training.*** **(i)** The employer shall provide employees who are potentially exposed to EtO at or above the action level with information and training on EtO at the time of initial assignment and at least annually thereafter.

(ii) Employees shall be informed of the following:

(A) The requirements of this section with an explanation of its contents, including **Appendices A** and **B;**

(B) Any operations in their work area where EtO is present;

(C) The location and availability of the written EtO final rule; and

(D) The medical surveillance program required by paragraph **(i)** of this section, with an explanation of the information in **Appendix C**.

(iii) Employer training shall include at least:

(A) Methods and observations that may be used to detect the presence or release of EtO in the work area (such as monitoring conducted by the employer, continuous monitoring devices, etc.);

(B) The physical and health hazards of EtO;

(C) The measures employees can take to protect themselves from hazards associated with EtO exposure, including specific procedures the employer has implemented to protect employees from exposure to EtO, such as work practices,
emergency procedures, and personal protective equipment to be used; and

(D) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and how employees can obtain and use the appropriate hazard information.

Formaldehyde 1910.1048(n)(1) through (3)(i) and (ii)(A) and (B)(iii) through (vii)

(n) ***Participation.*** **(1)** The employer shall assure that all employees who are assigned to workplaces where there is exposure to formaldehyde participate in a training program, except where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training.

(2) Frequency. Employers shall provide such information and training to employees at the time of initial assignment, and whenever a new exposure to formaldehyde is introduced into the work. The training shall be repeated at least annually.

(3) ***Training program***. The training program shall be conducted in a manner which the employee is able to understand and shall include:

(A) A description of the potential health hazards associated with exposure to formaldehyde and a description of the signs and symptoms of exposure to formaldehyde.

(B) instructions to immediately report to the employer the development of any adverse signs or symptoms that the employee suspects is attributable to formaldehyde exposure.

(iii) Description of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job;

(iv) The purpose for, proper use of, and limitations of personal protective clothing and equipment;

(v) Instructions for the handling of spills, emergencies, and clean-up procedures;

(vi) An explanation of the importance of engineering and work practice controls for employee protection and any necessary instruction in the use of these controls; and

(vii) A review of emergency procedures including the specific duties or assignments of each employee in the event of an emergency.

4,4' Methylenedianiline 1910.1050(k)(3)(i) and (ii)(A) and (4)(i)(ii)

(3) ***Information and training***. **(i)** The employer shall provide employees with information and training on MDA in accordance with **29 CFR 1910.1200(h)** at the time of initial assignment and at least annually thereafter.

(ii) In addition to the information required under **29 CFR 1910.1200(h)** the employer shall:

(A) Provide an explanation of the contents of this section, including **Appendices A** and **B**, and indicate to employees where a copy of the standard is available;

(4) ***Access to training materials***. **(i)** The employer shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy of this regulation.

(ii) The employer shall provide to the Assistant Secretary of Labor and the Director, upon request, all information and training materials relating to the employee information and training program.

Ionizing Radiation Testing 1910.1096(f)(3)(viii)

(viii) Before placing the system into operation, all employees normally working in the area shall be made acquainted with the signal by actual demonstration at their work locations.

Posting 1910.1096(i)(2)

(i)(2) All individuals working in or frequenting any portion of a radiation area shall be informed of the occurrence of radioactive materials or of radiation in such portions of the radiation area; shall be instructed in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; shall be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and shall be advised of reports of radiation exposure which employees must request pursuant to the regulations in this section.

Hazard Communication 1910.1200(h)(1),(2)(i) through (iii) and (3)(i) through (iv)

(h) ***Employee Information and Training.*** **(1)** Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(2) ***Information.*** Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(3) ***Training.*** Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

Occupational Exposure to Hazardous Chemicals in Laboratories 1910.1450(f)(1)(2) and (f)(4)(i)(A) through (c) and (ii)

(f) ***Employee information and training.*** **(1)** The employer shall provide employees with information and training to ensure that they are apprised of the hazards of chemicals present in their work area.

(2) Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The frequency of refresher information and training shall be determined by the employer.

(4)(i) Employee training shall include:

(A) Methods and observations that may be used to detect the presence release of a hazardous chemical (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(B) The physical and health hazards of chemicals in the work area; and

(C) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used.

(ii) The employee shall be trained on the applicable details of the employer's written Chemical Hygiene Plan.

Part 1915—Shipyard Employment

The following training requirements have been excerpted from *Title 29 Code of Federal Regulations Parts 1915* (Shipyard Employment), *1917* (Marine Terminals), and *1918* (Longshoring).

Note that in addition to these requirements, *Part 1910*, relating to general industry, also contains applicable training standards.

Subject and Standard Number	Training Requirement
Commercial Diving Operations	**Note:** The requirements applicable to Shipyard Employment under this section are identical to those set forth in **1910.410(a)(1); (2)(i) through (iii); (3) and (4).**
Competent Person 1915.7(b)(1)(i) through (iv); (2)(i) through (iii)(A) through (C); and (c)(1) through (7)	**(b)** Designation. **(1)** One or more competent persons shall be designated by the employer in accordance with the applicable requirements of this section, unless the requirements of subparts **B**, **C**, **D**, and **H** of this part are always carried out by a Marine Chemist. ***Exception***: The employer may designate any person who meets the applicable portions of the criteria set forth in paragraph **(c)** of this section as a competent person who is limited to performing testing to the following situations: **(i)** Repair work on small craft in boatyards where only combustible gas indicator tests are required for fuel tank leaks or when using flammable paints below decks; **(ii)** Building of wooden vessels where only knowledge of the precautions to be taken when using flammable paints is required; **(iii)** The breaking of vessels where there is no fuel oil or other flammable hazard; and **(iv)** Tests and inspections performed to comply with Section **1915.35(b)(8)** and **1915.36(a)(5)**.

(2)(i) The employer shall maintain either a roster of designated competent persons or a statement that a Marine Chemist will perform the tests or inspections which require a competent person.

(ii) The employer shall make the roster of designated persons or the statement available to employees, the employee's representative, the Director or the Assistant Secretary upon request.

(iii) The roster shall contain, at a minimum, the following:

(A) The employer's name,

(B) The designated competent person's name(s), and

(C) The date the employee was trained as a competent person.

(c) ***Criteria.*** The employer shall ensure that each designated competent person has the following skills and knowldege:

(1) Ability to understand and carry out written or oral information or instructions left by Marine Chemist, Coast Guard authorized persons, and Certified Industrial Hygienists;

(2) Knowledge of subparts **B**, **C**, **D**, and **H** of this part;

(3) Knowledge of the structure, location, and designation of spaces where work is done;

(4) Ability to calibrate and use testing equipment including, but not limited to, oxygen indicators, combustible gas indicators, carbon monoxide indicators, and carbon dioxide indicators, and to interpret accurately the test results of that equipment;

(5) Ability to perform all required tests and inspections which are or may be performed by a competent person as set forth in subparts **B**, **C**, **D**, and **H** of this part.

(6) Ability to inspect, test and evaluate spaces to determine the need for further testing by a Marine Chemist or a Certified Industrial Hygienist;

(7) Ability to maintain records required by this section.

Confined and Enclosed Spaces
1915.12(d)(1) and (2)(i) through (iii), (3)(i) through (iii), (4)(i) and (ii), (5)(i) and (ii)

(d) ***Training of employees entering confined and enclosed spaces or other dangerous atmospheres.*** **(1)** The employer shall ensure that each employee that enters a confined or enclosed space and other areas with dangerous atmospheres is trained to perform all required duties safely.

(2) The employer shall ensure that each employee who enters a confined space, enclosed space, or other areas with dangerous atmospheres is trained to:

(i) Recognize the characteristics of the confined space;

(ii) Anticipate and be aware of the hazards that may be faced during entry;

(iii) Recognize the adverse health effects that may be caused by the exposure to a hazard;

(iv) Understand the physical signs and reactions related to exposures to such hazards;

(v) Know what personal protective equipment is needed for safe entry into and exit from the space;

(vi) Use personal protective equipment; and

(vii) Where necessary, be aware of the presence and proper use of barriers that may be needed to protect an entrant from hazards.

(3) The employer shall ensure that each entrant into confined or enclosed spaces or other dangerous atmospheres is trained to exit the space or dangerous atmosphere whenever:

(i) The employer or his or her representative orders evacuation;

(ii) An evacuation signal such as an alarm is activated; or

(iii) The entrant perceives that he or she is in danger.

(4) The employer shall provide each employee with training:

(i) Before the entrant begins work addressed by this section; and

(ii) Whenever there is a change in operations or in an employee's duties that present a hazard about which the employee has not previously been trained.

(5) The employer shall certify that the training required by paragraphs **(d)(1)** through **(d)(4)** of this section has been accomplished.

(i) The certification shall contain the employee's name, the name of the certifier, and the date(s) of the certification.

(ii) The certification shall be available for inspection by the Assistant Secretary, the Director, employees, and their representatives.

Precautions Before Entering
1915.12(a)(1)(i) through (v)

(a) ***Oxygen content*** **(1)** The employer shall ensure that the following spaces are visually inpsected and tested by a competent person to determine the atmosphere's oxygen content prior to initial entry into the space by an employee:

(i) Spaces that have been sealed, such as, but not limited to, spaces that have been coated and closed up, and non-ventilated spaces that have been freshly painted;

(ii) Spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases;

(iii) Spaces and adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive, or irritant;

(iv) Spaces and adjacent spaces that have been fumigated; and

(v) Spaces containing materials or residues of materials that create an oxygen-deficient atmosphere.

1915.12(b)(1)(i) and (ii)

(b) ***Flammable atmospheres*** **(1)** The employer shall ensure that spaces and adjacent spaces that contain or have contained combustible or flammable liquids or gases are:

(i) Inspected visually by a competent person to determine the presence of combustible or flammable liquids; and,

(ii) Tested by a competent person prior to entry by an employee to determine the concentration of flammable vapors and gases within the space.

1915.12(b)(1)(i) and (ii)

(c) ***Toxic, corrosive, irritant or fumigated atmospheres and residues*** **(1)** The employer shall ensure that spaces or adjacent spaces that contain or have contained liquids, gases, or solids that are toxic, corrosive or irritant are:

(i) Inspected visually by a competent person to determine the presence of toxic, corrosive, or irritant residue contaminants; and

(ii) Tested by competent person prior to initial entry by an employee to determine the air concentration of toxics, corrosives, or irritants within the space.

Cleaning and Other Cold Work 1915.13(b)(2) and (4)

(2) Testing shall be conducted by a competent person to determine the concentration of flammable, combustible, toxic, corrosive, or irritant vapors within the space prior to the beginning of cleaning or cold work.

(4) Testing shall be conducted by a competent person as often as necessary during cleaning or cold work to assure that air concentrations are below 10 percent of the lower explosive limit and within the PELs and below IDLH levels. Factors such as, but not limited to, temperature, volatility of the residues, and other existing conditions in and about the spaces are to be considered in determining the frequency of testing necessary to assure a safe atmosphere.

Certification Before Hot Work is Begun 1915.14(b)(1)(i) through (v)

(b) ***Hot work requiring testing by a competent person*** **(1)** Hot work is not permitted in or on the following spaces or adjacent spaces or other dangerous atmospheres until they have been tested by a competent person and determined to contain no concentrations of flammable vapors equal to or greater than 10 percent of the lower explosive limit:

(i) Dry cargo holds,

(ii) The bilges,

(iii) The engine room and boiler spaces for which a Marine Chemist or a Coast Guard authorized person certificate is not required under paragraph (a)(1)(i) of this section,

(iv) Vessels and vessel sections for which a Marine Chemist or Coast Guard authorized person certificate is not required under paragraph (a)(1)(i) of this section, and

(v) Land-side confined and enclosed spaces or other dangerous atmospheres not covered by paragraph **(a)(1)** of this section.

Maintaining Gas Free Conditions, Ship Repairing 1910.15(c)

(c) ***Tests to maintain the conditions of a Marine Chemist's or Coast Guard authorized person's certificates.*** A competent person shall visually inspect and test each space certified as "Safe for Workers" or "Safe for Hot Work," as often as necessary to ensure that atmospheric conditions within that space is maintained within the conditions established by the certificate after the certificate has been issued.

Painting 1915.35(b)(1) and (8)

(b) ***Paints and tank coatings dissolved in highly volatile, toxic and flammable solvents.*** Several organic coatings, adhesives and resins are dissolved in highly toxic, flammable and explosive solvents with flash points below 80 degrees Fahrenheit. Work involving such materials shall be done only when all of the following special precautions have been taken:

(1) Sufficient exhaust ventilation shall be provided to keep the concentration of solvent vapors below 10 percent of the lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(8) A competent person shall inspect all power lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within 50 feet (15.2 meters) of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

Flammable Liquids 1915.36(a)(2) and (5)

(a) In all cases when liquid solvents, paint and preservative removers, paints or vehicles, other than those covered by § **1915.35(b)**, are capable of producing a flammable atmosphere under the conditions of use, the following precautions shall be taken:

(2) Ventilation shall be provided in sufficient quantities to keep the concentration of vapors below 10 percent of their lower explosive limit. Frequent tests shall be made by a competent person to ascertain the concentration.

(5) A competent person shall inspect all power and lighting cables to ensure that the insulation is in excellent condition, free of all cracks and worn spots, that there are no connections within 50 feet (15.2 meters) of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

Fire Prevention 1915.52(b)(3) and (c)

(3) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed and for a sufficient period of time after completion of the work to insure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the fire fighting equipment provided is to be used.

(c) In all cases, suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use. Personnel assigned to contain fires within controllable limits shall be instructed as to the specific anticipated fire hazards and how the fire fighting equipment provided is to be used. The provisions of this paragraph shall apply to shipbreaking only.

Welding, Cutting and Heating in Way of Preservative Coatings 1915.53(b)

(b) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

1915.53(e)(1)

(e) Before welding, cutting or heating is commenced in enclosed spaces on metals covered by soft and greasy preservatives, the following precautions shall be taken:

(1) A competent person shall test the atmosphere in the space to ensure that it does not contain explosive vapors, since there is a possibility that some soft and greasy preservatives may have flash points below temperatures which may be expected to occur naturally. If such vapors are determined to be present, no hot work shall be commenced until such precautions have been taken as will ensure that the welding, cutting or heating can be performed in safety.

1915.53(f)

(f) Immediately after welding, cutting or heating is commenced in enclosed spaces on metal covered by soft and greasy preservatives, and at frequent intervals thereafter, a competent person shall make tests to ensure that no flammable vapors are being produced by the coatings. If such vapors are determined to be present, the operation shall be stopped immediately and shall not be resumed until such additional precautions have been taken as are necessary to ensure that the operation can be resumed safely.

Welding, Cutting and Heating of Hollow Metal Containers and Structures Not Covered by 1915.12

(c) Before welding, cutting, heating or brazing is begun on structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, a competent person shall inspect the object and, if necessary, test it for the presence of flammable liquids or vapors. If flammable liquids or vapors are present, the objects shall be made safe.

Gas Welding and Cutting 1915.55(d)(1) through (6)

(d) ***Use of fuel gas.*** The employer shall thoroughly instruct employees in the safe use of fuel gas, as follows:

(1) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. To permit quick closing, valves on fuel gas cylinders shall not be opened more than 1-1/2 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the vessel. In the event that fuel gas should leak from the cylinder valve rather than from the valve stem and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the vessel. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seal, the cylinder need not be removed from the vessel.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the vessel.

Arc Welding and Cutting 1915.56(d)(1) through (4)

(d) ***Operating instructions.*** Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected so that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting

machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

Uses of Fissionable Material 1915.57(b)

(b) Any activity which involves the use of radioactive material, whether or not under license from the Nuclear Regulatory Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under direction and supervision of the licensee, shall perform such work.

Scaffolds or Staging 1915.71(b)(7)

(7) No scaffold shall be erected, moved, dismantled or altered except under the supervision of competent persons.

Work on or in the Vicinity of Radar and Radio 1915.95(a)

Note: The provisions of this section shall apply to ship repairing and ship building.

(a) No employees other than radar or radio repairmen shall be permitted to work on masts, king posts or other aloft areas unless the radar and radio are secured or otherwise made incapable of radiation. In either event, the radio and radar shall be appropriately tagged.

First-Aid 1915.98(a)

(a) Unless a first-aid room and a qualified attendant are close at hand and prepared to render first-aid to employees on behalf of the employer, the employer shall furnish a first-aid kit for each vessel on which work is being performed, except that when work is being performed on more than one small vessel at one pier, only one kit shall be required. The kit, when required, shall be kept close to the vessel and at least one employee, close at hand, shall be qualified to administer first-aid to the injured.

Ropes, Chains and Slings 1915.112(c)(5)

(5) All repairs to chains shall be made under qualified supervision. Links or portions of the chain found to be defective as described in paragraph **(c)(4)** of this section shall be replaced by links having proper dimensions and made of material similar to that of the chain. Before repaired chains are returned to service, they shall be proof tested to the proof test load recommended by the manufacturer.

Use of Gear 1915.116(1)

(l) An individual who is familiar with the signal code in use shall be assigned to act as a signalman when the hoist operator cannot see the load being handled. Communications shall be made by means of clear and distinct visual or auditory signals except that verbal signals shall not be permitted.

Qualifications of Operators 1915.117(a) and (b)

Paragraph **(a)** of this section shall apply to ship repairing and shipbuilding only. Paragraph **(b)** of this section shall apply to ship repairing, shipbuilding and shipbreaking.

(a) When ship's gear is used to hoist materials aboard, a competent person shall determine that the gear is properly rigged, that it is in safe condition, and that it will not be overloaded by the size and weight of the lift.

(b) Only those employees who understand the signs, notices, and operating instructions, and are familiar with the signal code in use, shall be permitted to operate a crane, winch, or other power operated hoisting apparatus.

Powder Actuated Fastening Tools 1915.135(a) and (c)(1) through (6)

(a) This section shall apply to ship repairing and shipbuilding only.

(c) Instruction of operators. Before employees are permitted to use powder actuated tools, they shall have been thoroughly instructed by a competent person with respect to the requirements of paragraph **(b)** of this section and the safe use of such tools as follows:

(1) Before using a tool, the operator shall inspect it to determine that it is clean, that all moving parts operate freely and that the barrel is free from obstructions.

(2) When a tool develops a defect during use, the operator shall immediately cease to use it and shall notify his supervisor.

(3) Tools shall not be loaded until just prior to the intended firing time and the tool shall not be left unattended while loaded.

(4) The tool, whether loaded or empty, shall not be pointed at any person, and hands shall be kept clear of the open barrel end.

(5) In case of a misfire, the operator shall hold the tool in the operating position for at least 15 seconds and shall continue to hold the muzzle against the work surface during disassembly or opening of the tool and removal of the powder load.

(6) Neither tools nor powder charges shall be left unattended in places where they would be available to unauthorized persons.

Internal Combustion Engines, Other than Ships' Equipment 1915.136(c)

(c) When internal combustion engines on vehicles, such as forklifts and mobile cranes, or on portable equipment such as fans, generators, and pumps, exhaust into the atmosphere below decks, the competent person shall make tests of the carbon monoxide content of the atmosphere as frequently as conditions require to ensure that dangerous concentrations do not develop. Employees shall be removed from the compartment involved when the carbon monoxide concentration exceeds 50 parts per million (0.005%). The employer shall use blowers sufficient in size and number and so arranged as to maintain the concentration below this allowable limit before work is resumed.

General Requirements 1915.152(e)(1)(i) through (v); (2), (3)(i) through (iii); and (4)

(e) ***Training.*** **(1)** The employer shall provide training to each employee who is required by this section to use PPE (**Exception**: Training in the use of personal fall arrest systems and positioning device systems is covered in Sections **1915.159** and **1915.160**) Each employee shall be trained to understand at least the following:

(i) When PPE is necessary;

(ii) What PPE is necessary;

(iii) How to properly don, doff, adjust , and wear PPE;

(iv) The limitations of the PPE; and

(v) The proper care, maintenance, useful life, and disposal of the PPE.

(2) The employer shall ensure that each affected employee demonstrates the ability to use PPE properly before being allowed to perform work requiring the use of PPE.

(3) The employer shall retrain any employee who does not understand or display the skills required by paragraph **(e)(2)** of this section. Circumstances where retraining is required include, but are not limited to, situations where:

(i) Changes in occupation or work render previous training obsolete; or

(ii) Changes in the types of PPE to be used render previous training obsolete; or

(iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(4) The employer shall verify that each affected employee has received the required training through a document that contains the following information: name of each employee trained, the date(s) of training, and type of training the employee received.

Respiratory Protection 1915.152(a)(4)

Note: The requirements applicable to Maritime Training Requirements under this section are identical to those set forth in **29 CFR 1910.134(a)(3), (b)(3), (e)(2)** through **(4)** and **(5)(i).**

Personal Fall Arrest Systems 1915.159(d)

(d) ***Training***. Before using personal fall arrest equipment, each affected employee shall be trained to understand the application limits of the equipment and proper hookup, anchoring, and tie-off techniques. Affected employees shall also be trained so that they can demonstrate the proper use, inspection, and storage of their equipment.

Positioning Device Systems 1915.160(d)

(d) ***Training***. Before using a positioning device system, employees shall be trained in the application limits, proper hookup, anchoring and tie-off techniques, methods of use, inspection, and storage of positioning device systems.

Portable Air Receivers and Other Unfired Pressure Vessels 1915.172(b)

(b) portable, unfired pressure vessels, not built to the code requirements of paragraph **(a)** of this section, and built prior to the effective date of this regulation, shall be examined quarterly by a competent person. They shall be subjected yearly to a hydrostatic pressure test of one and one-half times the working pressure of the vessels.

Asbestos 1915.1001(k)(9)(i) through (vi)(A) through (J)

(k) ***Communication of hazards***. **(9)** ***Employee information and training***. **(i)** The employer shall at no cost to the employee institute a training program for all employees who install asbestos containing products and for all employees who perform Class I through Class IV asbestos operations and shall ensure their participation in the program.

(ii) Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.

(iii) Training for Class I and II operations shall be the equivalent in curriculum, training method, and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR) Pt. 763, Subpart E, C). For employers whose Class II work with asbestos-containing material involves only the removal and/or disturbance of one generic category of building vessel material, such as roofing materials, flooring/deck materials, siding materials or transite panels, instead, the employer is required to train employees who perform such work by providing a training course which includes as a minimum all the elements included in paragraph **(k)(8)(v)** of this section and in addition the specific work practices and engineering controls set forth in paragraph **(g)** of this section which specifically relate to that material category. Such courses shall include "hands-on" training and shall take at least 8 hours.

(iv) Training for Class III employees shall be the equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers who conduct activities that will result in the disturbance of ACM (see 40 CFR 763.92(a)(2). Such course shall include "hands-on" training in the use of respiratory protection and work practices and shall take at least 15 hours.

(v) Training for employees performing Class IV operations shall be the equivalent in curriculum and training method to the awareness training course developed by EPA for maintenance and custodial workers who work in buildings containing asbestos-containing material (See 40 CFR 763.92(a)(1)). Such course shall include

available information concerning the locations of PACM and ACM and asbestos containing flooring material where the absence of asbestos has not been certified; and instruction in recognition of damage, deterioration, and delamination of asbestos-containing building materials. Such course shall take at least 2 hours.

(vi) The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraph **(k)(8)(iii)** of this section, the employer shall ensure that each such employee is informed of the following:

(A) Methods of recognizing asbestos including the requirement in paragraph **(k)(1)** of this section to presume that certain building materials contain asbestos;

(B) The health effects associated with asbestos exposure;

(C) The relationship between smoking and asbestos in producing lung cancer;

(D) The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures; where Class II and IV work will be or is performed, the contents of EPA 20T-2003, "Managing Asbestos In Place," July 1990, or its equivalent in content;

(E) The purpose, proper use, fitting instructions, and limitations of respirators as required by **29 CFR 1910.134**;

(F) The appropriate work practices for performing the asbestos job;

(G) Medical surveillance program requirements;

(H) The contents of this standard including appendices;

(I) The names, addresses and phone numbers of public health organizations which provide information and materials and which conduct programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix J, to comply with this requirement;

(J) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.

13 carcinogens 1915.1003

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1003**.

Vinyl Chloride 1915.1017

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1017**.

Inorganic Arsenic 1915.1018

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1018**.

Lead 1915.1025

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1025**.

Cadmium 1915.1027

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1027**.

Benzene 1915.1028

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1028**.

Bloodborne Pathogens 1915.1030

Note: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1030**.

1,2-Dibromo-3-Chloropropane 1915.1044	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1044**.
Acrylonitrile 1915.1045	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1045**.
Ethylene Oxide 1915.1047	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1047**.
Formaldehyde 1915.1048	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1048**.
Methylenedianiline 1915.1050	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1050**.
Ionizing Radiation 1915.1096	**Note**: The requirements appliacable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1096**.
Hazard Communication 1915.1200	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1200**.
Occupational Exposure to Hazardous Chemicals in Laboratories 1915.1450	**Note**: The requirements applicable to shipyard employment under this section are identical to those set forth in **29 CFR 1910.1450**.

Part 1917—Marine Terminals

Commercial Diving Operations 1917.1(a)(2)(iii)	**Note:** The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.410(a)(1); (2)(i) through (iii); (3) and (4)**.
Electrical Safety-Related Work Practices 1917.1(a)(2)(iv)	**Note:** The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.332(b)(1).**
Grain Handling Facilities 1917.1(a)(2)(v)	**Note**: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.272(e)(1)(i) and (ii) and (2).**
Hazard Communication 1917.1(a)(2)(iv)	**Note**: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.1200(h)(1) and (3)(i) through (iv).**
Ionizing Radiation 1917.1(a)(2)(vii)	**Note**: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.1096(i)(2).**
Hearing Protection 1917.1(a)(2)(viii)	**Note**: The requirement applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.95(i)(4).**
Respiratory Protection 1910.1(a)(2)(x)	**Note**: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.134(k)(3)**
Servicing Multi-Piece and Single-Piece Rim Wheels 1910.1(a)(2)(xii)	**Note**: The requirement applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.177(c)(1)(i) through (iii); (2)(i) through (viii) and (3) including single piece wheels per *Federal Register* of February 3, 1984 (pp. 4338-4352) but not automobile or truck tires marked "LT."**

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Toxic and Hazardous Substances 1917.1(a)(2)(xiii)

Note: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910 Subpart Z**.

Hazardous Atmospheres and Substances 1917.23(b)(1)

Note: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910 Subpart Z**.

(b) ***Determination of Hazard*** **(1)** When the employer is aware that a room, building, vehicle, railcar, or other space contains or has contained a hazardous atmosphere, a designated and appropriately equipped person shall test the atmosphere before employee entry to determine whether a hazardous atmosphere exists.

1917.23(d)(3)

(d) ***Entry into hazardous atmospheres.*** Only designated persons shall enter hazardous atmospheres, in which case the following provisions shall apply:

(3) Except for emergency or rescue operations, employees shall not enter into any atmosphere which has been identified as flammable or oxygen deficient (less than 19.5 percent oxygen). Persons who may be required to enter flammable or oxygen deficient atmospheres in emergency operations shall be instructed in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized.

Fumigants, Pesticides, Insecticides, and Hazardous Preservatives 1917.25(e)(2) and (3)

(2) Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precautions to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such a space.

(3) Persons who may be required to enter flammable or oxygen deficient atmospheres in emergency operations shall be instructed in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized.

Personnel 1917.27(a)(1) and (b)(1) and (2)

(a) ***Qualifications of machinery operators.*** **(1)** Only those employees determined by the employer to be competent by reason of training or experience, and who understand the signs, notices and operating instructions and are familiar with the signal code in use shall be permitted to operate a crane, winch or other power operated cargo handling apparatus, or any power operated vehicle, or give signals to the operator of any hoisting apparatus. *Exception:* Employees being trained and supervised by a designated person may operate such machinery and give signals to operators during training.

(b) ***Supervisory accident prevention proficiency.*** **(1)** After October 3, 1985 immediate supervisors of cargo-handling operations of more than five (5) persons shall satisfactorily complete a course in accident prevention. Employees newly assigned to supervisory duties after that date shall be required to meet the provisions of this paragraph within 90 days of such assignment.

(2) The course shall consist of instruction suited to the particular operations involved.*

*The following are recommended topics: **(i)** Safety responsibility and authority; **(ii)** elements of accident prevention; **(iii)** attitudes, leadership and motivation; **(iv)** hazards of longshoring, including peculiar local circumstances; **(v)** hazard identification and elimination; **(vi)** applicable regulations; and **(vii)** accident investigations.

Hazard Communication 1917.28

Note: The requirements applicable to Marine Terminals under this section are identical to those set forth in **29 CFR 1910.1200(h)(1)** and **(3)(i)** through **(iv)**.

Emergency Action Plans 1917.30(a)(5)(i) and (ii)(A) through (C)(iii)

5) ***Training*** **(i)** Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

(ii) The employer shall review the plan with each employee covered by the plan at the following times:

(A) Initially when the plan is developed;

(B) Whenever the employee's responsibilities or designated actions under the plan change; and,

(C) Whenever the plan is changed.

(iii) The employer shall review with each employee upon initial assignment those parts of the plan that the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and be made available for employee review.

General Rules Applicable to Vehicles 1917.44(i) and (ii)(A) through (G)

(a) The requirements of this section apply to general vehicle use within marine terminals. **Exception**: The provisions of paragraphs **(c)** and **(1)** of this section do not apply when preempted by applicable regulation of the Department of Transportation.

(i) A distance of not less than 20 feet (6.1 Meters) shall be maintained between the first two vehicles in a check-in, check-out, roadability, or vessel loading/discharging line. The distance shall be maintained between any subsequent vehicles behind which employees are required to work.

(ii) The employer shall ensure that each employee demonstrates his ability to service multipiece rim wheels, including performance of the following tasks.

(A) Tire demounting (including deflation);

(B) Inspection of wheel components;

(C) Mounting of tires;

(D) Inflation of tires, including use of a restraining device;

(E) Handling of wheels;

(F) Inflation of tires when a wheel is mounted on the vehicle; and

(G) Installation and removal of wheels.

Terminal Facilities—Handling Menhaden and Similar Species of Fish 1917.73(d)

(d) The plant superintendent and foremen shall be trained and be knowledgeable about the hazards of hydrogen sulfide and oxygen deficiency. They shall be trained in the use of appropriate respiratory and other protective equipment, and in rescue procedures. Other supervisory plant personnel shall be informed of these hazards and instructed in the necessary safety measures, including use of respiratory and rescue equipment.

Welding, Cutting and Heating (Hot Work) 1917.152(c)(4)

(4) When the hot work operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire during hot work and for a sufficient time after completion of the work to ensure that no fire hazard remains. The employer shall instruct all employees involved in hot work operations as to potential fire hazards and the use of firefighting equipment.

Part 1918—Longshoring

Commercial Diving Operations 1918.1(b)(2)

Note: The requirements spplicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.410(a)(1); (2)(i) through (iii); (3) and (4).**

Electrical Safety-Related Work Practices 1918.1(b)(3)

Note: The requirements spplicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.332(b)(1).**

Hazard Communication 1918.1(b)(4)

Note: The requirements applicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.1200(h)(1) and 3)(i) and (iv).**

Ionizing Radiation 1918.1(b)(5)

Note: The requirements applicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.1096(i)(2).**

Hearing Protection 1918.1(b)(6)

Note: The requirements applicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.95(i)(4)**

Respiratory Protection 1918.1(b)(8)

Note: The requirements applicable to Longshoring under this section are identical to those set forth in **29 CFR 1910.134(k)(3).**

Toxic and Hazardous Substances 1918.1(b)(9)

Note: The requirements applicable to Longshoring under this section are identical to those set forth in **29 CFR 1910, Subpart Z.**

Containerized Cargo Operations—Fall Protection Systems 1918.85(k)(12)

(k) ***Fall Protection Systems*** **(12)** Before using any fall protection system, the employee shall be trained in the use and application limits of the equipment, proper hook up, anchoring and tie-off techniques, methods of use, and proper methods of equipment inspection and storage.

Hazardous Atmospheres and Substances 1918.93(d)(3)

(3) Except in emergency or rescue operations, employees shall not enter any atmosphere identified as flammable or oxygen-deficient (less than 19.5 percent oxygen). Persons who may be required to enter flammable or oxygen-deficient atmospheres in emergency operations shall be instructed in the dangers attendant to those atmospheres and be instructed in the use of self-contained breathing apparatus which shall be used for entry.

Ventilation and Atmospheric Conditions and Fumigants 1918.94(b)(v)

(b) To prevent inadvertent employee entry into spaces identified as having hazardous, flammable, or oxygen-deficient atmospheres, appropriate warning signs or equivalent means shall be posted at all means of access to those spaces.

(v) One or more employees on duty shall be equipped and trained to provide any specific emergency medical treatment stipulated for the particular fumigant.

First-Aid and Life Saving Facilities 1918.97(b)

(b) ***First-Aid.*** A first-aid kit shall be available at or near each vessel being worked. At least one person holding a valid first-aid certificate, such as is issued by the Red Cross or other equivalent organization, shall be available to render first-aid when work is in progress.

Qualifications of Machinery Operators 1918.98(a)(1)

(a) ***Qualification of machinery operators.*** **(1)** Only an employee determined by the employer to be competent by reason of training or experience,and who understands the signs, notices, and operating instructions and is familiar with the signal code in use, shall be permitted to operate a crane, winch, or other power-operated cargo handling apparatus, or any power-operated vehicle, or give signals to the operator of any hoisting apparatus. However, an employee being trained and supervised by a designated person may operate such machinery and give signals to operators during training.

69 Construction Training Requirements

The following training requirements have been excerpted from Title 29, *Code of Federal Regulations Part 1926*. Note that in addition to these requirements, *Part 1910*, relating to general industry, also contains applicable training standards.

Subject and Standard Number	Training Requirement
General Safety and Health Provisions 1926.20(b(2) and (4))	**(2)** Such programs [as may be necessary to comply with this part] shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons [capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who have authorization to take prompt corrective measures to eliminate them designated by the employers]. **(4)** The employer shall permit only those employees qualified [one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project] by training or experience to operate equipment and machinery.
Safety Training and Education 1926.21(a)	**(a)** ***General requirements***. The Secretary shall, pursuant to section **107(f)** of the Act establish and supervise programs for the education and training of employers and employees in the recognition, and prevention of unsafe conditions in employments covered by the Act.
1926.21(b)(1) through (6)(i) and (ii)	**(1)** The employer should avail himself of the safety and health training programs the Secretary provides. **(2)** The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury. **(3)** Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding their safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required. **(4)** In job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards and how to avoid injury, and the first-aid procedures to be used in the event of injury. (5) Employees required to handle or use flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the specific requirements contained in Subparts **D**, **F**, and other applicable subparts of this part. **(6) (i)** All employees required to enter into confined or enclosed spaces shall be in-structed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas. **(ii)** For purposes of subdivision **(i)** of this subparagraph, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks,

process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet (1.2 meters) in depth such as pits, tubs, vaults, and vessels.

Employee Emergency Action Plans 1926.35(e)(1) and (2)(i) through (iii) and (3)

(e) ***Training.*** **(1)** Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

(2) The employer shall review the plan with each employee covered by the plan at the following times:

(i) Initially when the plan is developed,

(ii) Whenever the employee's responsibilities or designated actions under the plan change, and

(iii) Whenever the plan is changed.

(3) The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and made available for employee review. For those employers with 10 or fewer employees the plan may be communicated orally to employees and the employer need not maintain a written plan.

Medical Services and First-aid 1926.50(c)

(c) In the absence of an infirmary, clinic, hospital, or physician that is reasonably accessible in terms of time and distance to the worksite which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first-aid.

Ionizing Radiation 1926.53(b)

(b) Any activity which involves the use of radioactive materials or X-rays, whether or not under license from the Atomic Energy Commission [Nuclear Regulatory Commission] shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or competent persons under the direction and supervision of the licensee, shall perform such work.

Nonionizing Radiation 1926.54(a) and (b)

(a) Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment.

(b) Proof of qualification of the laser equipment operator shall be available and in possession of the operator at all times.

Gases, Vapors, Fumes, Dusts, and Mists 1926.55 (b)

(b) To achieve compliance with paragraph **(a)** of this section, administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and technical measures used for this purpose must first be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with **§ 1926.103**.

Hazard Communication 1926.59

Note: The requirements applicable to Construction under this section are identical to those set forth in **29 CFR 1910.1200(h)(1) and 3)(i) and (iv).**

Methylenedianiline 1926.60(l)(3)(i) and (ii)(A) through (C)

Lead in Construction 1926.62(l)(1)(i) through (iv); (2)(i) through (viii) and (3)(i) and (ii)

Note: The requirements applicable to construction under this section are identical to those set forth in **29 CFR 1910.1050(k)(3)(i) and (ii)(A) and (4)(i) and (ii)**.

(1) ***General.*** **(i)** The employer shall communicate information concerning lead hazards according to the requirements of OSHA's Hazard Communication Standard for the construction industry, **29 CFR 1026.59**, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

(ii) For all employees who are subject to exposure to lead at or above the action level on any day or who are subject to exposure to lead compounds which may cause skin or eye irritation (e.g., lead arsenate, lead azide), the employer shall provide a training program in accordance with paragraph **(1)(2)** of this section and assure employee participation.

(iii) The employer shall provide the training program as initial training prior to the time of job assignment or prior to the start up date for this requirement, whichever comes last.

(iv) The employer shall also provide the training program at least annually for each employee who is subject to lead exposure at or above the action level on any day.

(2) ***Training program.*** The employer shall assure that each employee is trained in the following:

(i) The content of this standard and its appendices;

(ii) The specific nature of the operations which could result in exposure to lead above the action level;

(iv) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant);

(v) The engineering controls and work practices associated with the employee's job assignment including training employees to follow relevant good work practices described in Appendix **(B)** of this section;

(vi) The contents of any compliance plan in effect;

(vii) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician; and

(viii) The employee's right of access to records under **29 CFR 1910.20**.

(3) ***Access to information and training materials.*** **(i)** The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to affected employees and their designated representative, and to the Assistant Secretary and the Director.

Process Safety Management of Highly Hazardous Chemicals 1926.64

Note: The requirements applicable to construction under this section are identical to those set forth in **29 CFR 1910.(g)(1)(i) and (ii).**

Hazardous Waste Operations and Emergency Response 1926.65

Note: The requirements applicable to construction under this section are identical to those set forth in **29 CFR 1910.120(e)(1)(i) and (ii); (2)(i) through (vii); (3)(i) through (iv) and (4) through (9).**

Hearing Protection 1926.101(b)

(b) Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.

Respiratory Protection 1926.103(c)(1)

Note: The requirements applicable to construction under this section are identical to those set forth in **1910.134(k)(3)**

Fire Protection 1926.150(a)(5)

(5) As warranted by the project, the employer shall provide a trained and equipped fire fighting organization (Fire Brigade) to ensure adequate protection to life. "Fire Brigade" means an organized group of employees that are knowledgeable, trained, and skilled in the safe evacuation of employees during emergency situations and in assisting in firefighting operations.

1926.150(c)(1)(viii)

(viii) Portable fire extinguishers shall be inspected periodically and maintained in accordance with *Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A-1970.*

From ANSI/NFPA Standard 10A-1970: "The owner or occupant of a property in which fire extinguishers are located has an obligation for the care and use of these extinguishers at all times. By doing so, he is contributing to the protection of life and property. The nameplate(s) and instruction manual should be read and thoroughly understood by all persons who may be expected to use extinguishers.

"1120. To discharge this obligation he should give proper attention to the inspection, maintenance, and recharging of this fire protective equipment. He should also train his personnel in the correct use of fire extinguishers on the different types of fires which may occur on his property.

"3020. Persons responsible for performing maintenance operations come from three major groups:

"Trained industrial safety or maintenance personnel;

"Extinguisher service agencies;

"Individual owners (e.g., self-employed. . . .).

Signaling 1926.201(a)(2)

(2) Signaling directions by flagmen shall conform to American National Standards Institute D6.1-1971, *Manual on Uniform Traffic Control Devices for Streets and Highways.*

Powder-Operated Hand Tools 1926.302(e)(1) and (12)

(1) Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder actuated tool.

(12) Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3-1970, *Safety Requirements for Explosive-Actuated Fastening Tools.*

Woodworking Tools 1926.304(f)

(f) ***Other requirements.*** All woodworking tools and machinery shall meet other applicable requirements of American National Standards Institute, 01.1-1961, *Safety Code for Woodworking Machinery.*

From ANSI Standard 01.1-1961, *Selection and Training of Operators:* "Before a worker is permitted to operate any woodworking machine, he shall receive instructions in the hazards of the machine and the safe method of its operation. Refer to A9.7 of the Appendix.

"A9.7 Selection and Training of Operators. Operation of Machines, Tools, and Equipment. General."

"(1) Learn the machine's applications and limitations, as well as the specific potential hazards peculiar to this machine. Follow available operating instructions and safety rules carefully.

"**(2)** Keep working area clean and be sure adequate lighting is available.

"**(3)** Do not wear loose clothing, gloves, bracelets, necklaces, or ornaments. Wear face, eye, ear, respiratory, and body protection devices, as indicated for the operation or environment.

"**(4)** Do not use cutting tools larger or heavier than the machine is designed to accommodate. Never operate a cutting tool at greater speed than recommended.

"**(5)** Keep hands well away from saw blades and other cutting tools. Use a push stock or push block to hold or guide the work when working close to a cutting tool.

"**(6)** Whenever possible, use properly locked clamps, jig, or vise to hold the work.

"**(7)** Combs (feather boards) shall be provided for use when an applicable guard cannot be used.

"**(8)** Never stand directly in line with a horizontally rotating cutting tool. This is particularly true when first starting a new tool, or a new tool is initially installed on the arbor.

"**(9)** Be sure the power is disconnected from the machine before tools are serviced.

"**(10)** Never leave the machine with the power on.

"**(11)** Be positive that hold-downs and anti-kickback devices are positioned properly, and that the workpiece is being fed through the cutting tool in the right direction.

"**(12)** Do not use a dull, gummy, bent, or cracked cutting tool.

"**(13)** Be sure that keys and adjusting wrenches have been removed before turning power on.

"**(14)** Use only accessories designed for the machine.

"**(15)** Adjust the machine for minimum exposure of cutting tool necessary to perform the operation."

Gas Welding and Cutting 1926.350 (d)(1) through (6)

(d) ***Use of fuel gas.*** The employer shall thoroughly instruct employees in the safe use of fuel gas as follows:

(1) Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve shall stand to one side of the outlet, not in front of it. The valve of a fuel gas cylinder shall not be cracked where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

(2) The cylinder valve shall always be opened slowly to prevent damage to the regulator. For quick closing, valves on fuel gas cylinders shall not be opened more than 1-1/2 turns. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench shall always be available for immediate use. Nothing shall be placed on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(3) Fuel gas shall not be used from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(4) Before a regulator is removed from a cylinder valve, the cylinder valve shall always be closed and the gas released from the regulator.

(5) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, the valve shall be closed and the gland nut tightened. If this action does not stop the leak, the use of the cylinder shall be discontinued, and it shall be properly tagged and removed from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged and removed from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.

(6) If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.

1926.350(j)

(j) ***Additional rules*** For additional details not covered in this subpart, applicable technical portions of American National Standards Institute, Z49.1-1967, *Safety in Welding and Cutting*, shall apply.

From ANSI Standard Z49.1-1967, *Fire Watch Duties*: "Fire watchers shall be trained in the use of fire extinguishing equipment. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires."

Arc Welding and Cutting 1926.351(d)(1) through (5)

(d) ***Operating instructions***. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

(1) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(2) Hot electrode holders shall not be dipped in water; to do so may expose the arc welder or cutter to electric shock.

(3) When the arc welder or cutter has occasion to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment shall be opened.

(4) Any faulty or defective equipment shall be reported to the supervisor.

(5) Other requirements, as outlined in Article 630, National Electrical Code, NFPA 70-1971; ANSI C1-1971 (Rev. of 1968), Electric Welders, shall be used when applicable.

Fire Prevention 1926.352(e)

(e) When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists. Such personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

Welding, Cutting and Heating in Way of Preservative Coatings 1926.354(a)

(a) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

Ground Fault Protection 1926.404(b)(iii)(B)

(iii)(B) The employer shall designate one or more competent persons (as defined in § 1926.32(f)) to implement the program.

Scaffolding—Training Requirements 1926.454(a)(1) through (5) and (b)(1) through (4) and (c)(1) through (3)

Training Requirements. (a) The employer shall have each employee who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall include the following areas, as applicable:

(1) The nature of any electrical hazards, fall hazards and falling object hazards in the work area;

(2) The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used;

(3) The proper use of the scaffold and the proper handling of materials on the scaffold;

(4) The maximum intended load and the load-carrying capacities of the scaffolds used; and

(5) Any other pertinent requirements of this subpart.

(b) The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a competent person to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable:

(1) The nature of scaffold hazards;

(2) The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question;

(3) The design criteria, maximum intended load-carrying capacity and intended use of the scaffold;

(4) Any other pertinent requirements of this subject.

(c) When the employer has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection use or dismantling of scaffolds, the employer shall retrain each such employee so that the requisite proficiency is regained. Retraining is required in at least the followoing situations:

(1) Where changes at the worksite present a hazard about which an employee has not been previously trained;

(2) Where changes in the types of scaffolds, or other equipment present a hazard about which an employee has not been previously trained; or

(3) Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

Fall Protection—Training Requirements 1926.503(a)(1) and (2)(ii) through (vii)

(a) ***Training Program.*** (1) The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

(2) The employer shall ensure that each employee has been trained, as necessary, by a competent person qualified in the following areas:

(i) The nature of fall hazards in the work area;

(ii) The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;

(iii) The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used;

(iv) The role of each employee in the safety monitoring system when this system is used;

(v) The limitations on the use of mechanical equipment during the performance of roofing work on low-slope roofs;

(vi) The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and

(vii) The standards contained in this subpart.

Cranes and Derricks 1926.550(a)(1), (5) and (6)

(1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

(5) The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.

(6) A thorough, annual inspection of the hoisting machinery shall be made by a competent person or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

1926.550(g)(4)(i)(A)

(4) ***Personnel platforms*** **(i)** ***Design criteria.*** **(A)** The personned platform and suspension system shall be designed by a qualified engineer or a qualified person competent in structural design.

1926.550(g)(5)(iv)

(iv) A visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

Material Hoists, Personnel Hoists, and Elevators
1926.552(a)(1)

(1) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of all hoists and elevators. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a professional engineer competent in the field.

1926.552(c)(15) and (17)(i)

(c) ***Personnel hoists***. **(15)** Following assembly and erection of hoists, and before being put in service, an inspection and test of all functions and safety devices shall be made under the supervision of a competent person. A similar inspection and test is required following major alterations of an existing installation. All hoists shall be inspected and tested at not more than 3-month intervals. Records shall be maintained and kept on file for the duration of the job.

(17)(i) Personnel hoists used in bridge tower construction shall be approved by a registered professional engineer and erected under the supervision of a qualified engineer competent in this field.

Material Handling Equipment
1926.602(c)(1)(vi)

(c) Lifting and hauling equipment (other than equipment covered under Subpart **N** of this part).

(1)(vi) All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1-1969, *Safety Standards for Powered Industrial Trucks.*

From ANSI Standard B56.1-1969: *Operator Training*: "Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks. Badges or other visual indication of the operators' authorization should be displayed at all times during the work period."

Site Clearing
1926.604(a)(1)

(1) Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and suitably instructed in the first-aid treatment available.

Excavations General Protection Requirements (Excavations, Trenching, and Shoring)
1926.651(c)(1)(i)

(c) ***Access and egress*** **(1)** ***Structural ramps.*** **(i)** Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in structural design, and shall be constructed in accordance with the design.

1926.651(h)(2) and (3)

(h) ***Protection from hazards associated with water accumulation.*** **(2)** If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

(3) If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adquate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with paragraphs **(h)(1)** and **(h)(2)** of this section.

1926.651(i)(1)

(i) ***Stability of adjacent structures.*** **(1)** Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

1926.651(i)(2)(iii)

(iii) A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or

1926.651(i)(2)(iv)

(iv) A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

1926.651(k)(1) and (2)

(k) ***Inspections.*** **(1)** Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

(2) Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Concrete and Masonry Construction 1926.701(a)

(a) No construction loads shall be placed on a concrete structure or portion of a concrete structure unless the employer determines, based on information received from a person who is qualified in structural design, that the structure or portion of the structure is capable of supporting the loads.

1926.703(b)(8)(i)

(i) The design of the shoring shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design.

Bolting, Riveting, Fitting-Up and Plumbing Up 1926.752(d)(4)

(4) Plumbing-up guys shall be removed only under the supervision of a competent person.

Underground Construction 1926.800(d)

(d) ***Safety instruction.*** All employees shall be instructed in the recognition and avoidance of hazards associated with underground construction activities including, where appropriate, the following subjects:

(1) Air monitoring;

(2) Ventilation;

(3) Illumination;

(4) Communications;

(5) Flood control;

(6) Mechanical equipment;

(7) Personal protective equipment;

(8) Explosives;

(9) Fire prevention and protection; and

(10) Emergency procedures, including evacuation plans and check-in/check-out systems.

1926.800(g)(2)

(g) ***Emergency provisions***. **(2)** ***Self-rescuers***. The employer shall provide self-rescuers having current approval from the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration to be immediately available to all employees at work stations in underground areas where employees might be trapped by smoke or gas. The selection, issuance, use, and care of respirators shall be in accordance with paragraphs **(b)** and **(c)** of **1926.103**.

1926.800(g)(5)(iii) through (v)

(g) ***Emergency provisions***. **(5)** Rescue teams. **(iii)** Rescue team members shall be qualified in rescue procedures, the use and limitations of breathing apparatus, and the use of firefighting equipment. Qualifications shall be reviewed not less than annually.

(iv) On jobsites where flammable or noxious gases are encountered or anticipated in hazardous quantities, rescue team members shall practice donning and using self-contained breathing apparatus monthly.

(v) The employer shall ensure that rescue teams are familiar with conditions at the jobsite.

1926.800(j)(1)(i)(A) and (B)

(j) ***Air quality and monitoring.*** **(1)** ***General*** **(i)(A)** The employer shall assign a competent person who shall perform all air monitoring required by this section.

(B) Where this paragraph requires monitoring of airborne contaminants "as often as necessary," the competent person shall make a reasonable determination as to which substances to monitor and how frequently to monitor taking into consideration: location of jobsite; geology of the jobsite; presence of air contaminants in nearby jobsites and changes in levels of substances monitored on prior shifts; and work practices and jobsite conditions including use of diesel engines, explosives, fuel gas, volume and flow of ventilation, visible atmospheric conditions, decompression of the atmosphere, welding, cutting, and hot work, and employees' physical reactions to working underground.

1926.800(j)(1)(vi)(A) and (B)

(j) ***Air quality and monitoring.*** **(1)** ***General.*** **(vi)** When the competent person determines, on the basis of air monitoring results or other information, that air contaminants may be present in sufficient quantity to be dangerous to life, the employer shall:

(A) Prominently post a notice at all entrances to the underground jobsite to inform all entrants of the hazardous condition; and

(B) Ensure that the necessary precautions are taken.

1926.800(o)(3)(i)(A)

(o) ***Ground support*** **(3)** ***Underground areas*** **(i)(A)** A competent person shall inspect the roof, face, and walls of the work area at the start of each shift and as often as necessary to determine ground stability.

1926.800(o)(3)(iv)(B)

(o) ***Ground support*** **(3)** ***Underground areas*** **(iv)(B)** A competent person shall determine whether rock bolts meet the necessary torque, and shall determine the testing frequency in light of the bolt system, ground conditions, and the distance from vibration sources.

1926.800(t)(3)(xix) and (xx)

(t) ***Hoisting unique to underground construction.*** **(3)** ***Additional requirements for hoists.*** **(xix)** A competent person shall visually check all hoisting machinery, equipment, anchorages, and hoisting ropes at the beginning of each shift during hoist use, as necessary.

(xx) Each safety device shall be checked by a competent person at least weekly during hoist use to ensure suitable operation and safe condition.

Compressed Air
1926.803(a)(1) and (2)

(1) There shall be present, at all times, at least one competent person designated by and representing the employer, who shall be familiar with this subpart in all respects, and responsible for full compliance with these and other applicable subparts.

(2) Every employee shall be instructed in the rules and regulations which concern his safety or the safety of others.

1926.803(b)(1) and (10)(xii)

(1) There shall be retained one or more licensed physicians familiar with and experienced in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. He shall be available at all times while work is in progress in order to provide medical supervision of employees employed in compressed air work. He shall himself be physically qualified and be willing to enter a pressurized environment.

(10) The medical lock shall:

(xii) Be in constant charge of an attendant under the direct control of the retained physician. The attendant shall be trained in the use of the lock and suitably instructed regarding steps to be taken in the treatment of employees exhibiting symptoms compatible with a diagnosis of decompression illness.

1926.803(e)(1)

(1) Every employee going under air pressure for the first time shall be instructed on how to avoid excessive discomfort.

1926.803(f)(2) and (3)

(2) In the event it is necessary for an employee to be in compressed air more than once in a 24-hour period, the appointed physician shall be responsible for the establishment of methods and procedures of decompression applicable to repeated exposures.

(3) If decanting is necessary, the appointed physician shall establish procedures before any employee is permitted to be decompressed by decanting methods. The period of time that the employees spend at atmospheric pressure between the decompression following the shift and recompression shall not exceed 5 minutes.

1926.803(h)(1)

(1) At all times there shall be a thoroughly experienced, competent, and reliable person on duty at the air control valves as a gauge tender who shall regulate the pressure in the working areas. During tunneling operations, one gauge tender may regulate the pressure in not more than two headings: Provided, that the gauge and controls are all in one location. In caisson work, there shall be a gauge tender for each caisson.

Preparatory Operations
1926.850(a)

(a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and the possibility of unplanned collapse

of any portion of the structure. Any adjacent structure where employees may be exposed shall also be simlarly checked. The employer shall have in writing evidence that such a survey has been performed.

Chutes
1926.852(c)

(c) A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate, and the backing and loading of trucks.

Mechanical Demolition
1926.859(g)

(g) During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

General Provisions (Blasting and Use of Explosives)
1926.900(a)

(a) The employer shall permit only authorized and qualified persons to handle and use explosives.

1926.900(k)(3)(i)

(i) The prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet (303 meters) of blasting operations. Whenever adherence to the 1,000-feet (303 meters) distance would create an operational handicap, a competent person shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary of Labor.

1926.900(q)

(q) All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.

Blaster Qualifications
1926.901(c), (d), and (e)

(c) A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives.

(d) Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

(e) The blaster shall be knowledgeable and competent in the use of each type of blasting method used.

Surface Transportation of Explosives
1926.902(b) and (i)

(b) Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulations governing the transportation of explosives.

(i) Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory-approved extinguisher of not less than 10-ABC rating will meet the minimum requirement. The driver shall be trained in the use of the extinguisher on his vehicle.

Firing the Blast 1926.909(a)

(a) A code of blasting signals equivalent to Table U-1, shall be posted on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. Danger signs shall be placed at suitable locations.

Table U-1

WARNING SIGNAL—**A 1-minute series of long blasts 5 minutes prior to blast signal.**

BLAST SIGNAL—**A series of short blasts 1 minute prior to the shot.**

ALL CLEAR SIGNAL—**A prolonged blast following the inspection of blast area.**

General Requirements (Power Transmission and Distribution) 1926.950(d)(1)(ii)(a), through (c), (vi) and (vii)

(1) When deenergizing lines and equipment operated in excess of 600 volts, and the means of disconnecting from electric energy is not visibly open or visibly locked out, the provisions of subdivisions **(i)** through **(vii)** of this subparagraph shall be complied with:

(ii) Notification and assurance from the designated employee [a qualified person delegated to perform specific duties under the conditions existing] shall be obtained that asserts that:

(a) All switches and disconnectors through which electric energy may be supplied to the particular section of line or equipment to be worked have been deenergized;

(b) All switches and disconnectors are plainly tagged indicating that men are at work;

(c) And that where design of such switches and disconnectors permits, they have been rendered inoperable.

(vi) When more than one independent crew requires the same line or equipment to be deenergized, a prominent tag for each such independent crew shall be placed on the line or equipment by the designated employee in charge.

(vii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

1926.950(d)(2)(ii)

(2) When a crew working on a line or equipment can clearly see that the means of disconnecting from electric energy are visibly open or visibly locked-out, the provisions of subdivisions **(i)** and **(ii)** of this paragraph shall apply:

(ii) Upon completion of work on deenergized lines or equipment, each designated employee in charge shall determine that all employees in his crew are clear, that protective grounds installed by his crew have been removed, and he shall report to the designated authority that all tags protecting his crew may be removed.

1926.950(e)(1)(i) and (ii) and (2)

(1) The employer shall provide training or require that his employees are knowledgeable and proficient in:

(i) Procedures involving emergency situations, and

(ii) First-aid fundamentals including resuscitation.

(2) In lieu of subparagraph **(1)** of this paragraph the employer may comply with the provisions of § **1926.50(c)** regarding first-aid requirements.

Overhead Lines
1926.955(b)(3)(i)

(3)(i) A designated employee shall be used in directing mobile equipment adjacent to footing excavations.

1926.955(b)(8) and (d)(1)

(b) ***Metal Tower Construction.*** **(8)** A designated employee shall be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.

(d) ***Stringing adjacent to energized lines.*** **(1)** Prior to stringing parallel to an existing energized transmission line a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist, the employer shall comply with the provisions of subparagraphs **(2)** through **(9)** of this paragraph in addition to the provisions of paragraph **(c)** of this **§ 1926.955,** unless the line is worked as energized.

1926.955(e)(1) and (4)

(1) Employes shall be instructed and trained in the live-line hand technique and the safety requirements pertinent thereto before being permitted to use the technique on energized circuits.

(4) All work shall be personally supervised by a person trained and qualified to perform live-line, bare-hand work.

Underground Lines
1926.956(b)(1)

(1) While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicintiy from occasionally entering a manhole to provide assistance, other than emergency. This requirement does not preclude a qualified employee [a person who by reason of experience or training is familiar with the operation to be performed and the hazards involved], working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

Construction in Energized Substations
1926.957(a)(1)

(1) When construction work is performed in an energized substation, authorization shall be obtained from the designated, authorized person [a qualified person delegated to perform specific duties under the conditions existing] before work is started.

1926.957(d)(1)

(1) Work on or adjacent to energized control panels shall be performed by designated employees.

1926.957(e)(1)

(1) Use of vehicles, gin poles, cranes, and other equipment in restricted or hazardous areas shall at all times be controlled by designated employees.

Ladders
1926.1053(b)(15)

(15) Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.

Training Requirements
1926.1060(a)(i) through (v) and (b)

The following training provisions clarify the requirements of **§ 1926.21(b)(2)** regarding the hazards addressed in **subpart X**.

(a) The employer shall provide a training program for each employee using ladders and stairways, as necessary. The program shall enable each employee to recognize hazards related to ladders and stairways, and shall train each employee in the procedures to be followed to minimize these hazards.

(1) The employer shall ensure that each employee has been trained by a competent person in the following areas, as applicable:

(i) The nature of fall hazards in the work area;

(ii) The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used;

(iii) The proper construction, use, placement, and care in handling of all stairways and ladders;

(iv) The maximum intended load carrying capacities of ladders used; and

(v) the standards contained in this subpart.

(b) Retraining shall be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this section.

Commercial Diving Operations 1926.1076

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR 1910.410.**

Asbestos 1926.1101(9)(i) through (viii)(A) through (e)(10)

(9) ***Employee information and training***. **(i)** The employer shall, at no cost, to the employee, institute a training program for all employees who are likely to be exposed in excess of a PEL and for all employees who perform Class I through IV asbestos operations, and shall ensure their participation in the program.

(ii) Training shall be provided prior to or at at the time of initial assignment and at least annually thereafter.

(iii) Training for Class I operations shall be the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR part 763, subpart E, appendix C).

(viii) The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraph **(k)(9)(iii)** through **(vi)**, the employer shall ensure that such employee is informed of the following:

(A) Methods of recognizing asbestos including the requirement in paragraph **(k)(1)** to presume that certain building materials contain asbestos;

(B) The health effects associated with asbestos exposure;

(C) The relationship between smoking and asbestos in producing lung cancer.

(D) The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures where Class III and IV work will be or is performed, the contents of EPA 20T-2003, "Managing Asbestos In-Place" July 1990 or its equivalent in content;

(E) The purpose, proper use, fitting instructions, and limitations of respirators as required by **29 CFR 1910.134.**

(10) Access to training materials. **(i)** The employer shall make readily available to affected employees without cost, written materials relating to the employee training program, including a copy of this regulation.

13 Carcinogens 1926.1103

Note: The requirements applicable to construction work under this section are identical to those set forth in **1910.1003**.

Vinyl Chloride 1926.1117

Note: The requirements applicable to construction work under this section are identical to those set forth in **1910.1017**.

Inorganic Arsenic 1926.1118

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1018**.

Cadmium 1926.1127(m)(4)(i) through (iii)(A) through (E)

(4) ***Employee information and training***. **(i)** The employer shall insitute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such a program.

(ii) Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

(iii) The employer shall make the training program understandable to the employee(s) and shall assure that each employee is informed of the following:

(A) The health hazards associated with cadmium exposure, with special attention to the information incorporated in Appendix A of this section;

(B) The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;

(C) The engineering controls and work practices associated with the employees' job assignments;

(D) The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect exployees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

(E) The purpose, proper selection, fitting, proper use, and limitations of respirators and protective clothing.

Benzene 1926.1128

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1028**.

Coke Oven Emissions 1926.1129

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1029**.

1,2-Dibromo-3-chloro-propane 1926.1144

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1044**.

Acrylonitrile 1926.1145

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1045**.

Ethylene Oxide 1926.1147

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1047**.

Formaldehyde 1926.1148

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1048.**

Methylene Chloride 1926.1152

Note: The requirements applicable to construction work under this section are identical to those set forth in **29 CFR1910.1052**.

The following training requirements have been excerpted from *Title 29, Code of Federal Regulations Part 1928.* Note that in addition to these requirements, *Part 1910*, relating to general industry, also contains applicable training standards.

Subject and Standard Number	Training Requirement
Temporary Labor Camps 1928.142	**Note:** The requirements applicable to agricultural training requirements under this section are identical to those set forth in **29 CFR1910.142**.
Logging 1928.266	**Note**: The requirements applicable to agricultural training requirements under this section are identical to those set forth in **29 CFR1910.266**.
Hazard Communication 1928.1200	**Note:** The requirements applicable to agricultural training requirements under this section are identical to those set forth in **29 CFR1910.1200.**
Cadmium 1928.1027	**Note:** The requirements applicable to agricultural training requirements under this section are identical to those set forth in **29 CFR1910.1027**.
Roll-Over Protective Structures (ROPS) for Tractors Used in Agri-Cultural Operations 1928.51(d)	**(d)** Operating instructions. Every employee who operates an agricultural tractor shall be informed of the operating practices contained in Exhibit A of this part and of any other practices dictated by the work environment. Such information shall be provided at the time of initial assignment and at least annually thereafter. **Exhibit A—Employee Operating Instructions** **1.** Securely fasten your seat belt if the tractor has a ROPS. **2.** Where possible, avoid operating the tractor near ditches, embankments, and holes. **3.** Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces. **4.** Stay off slopes too steep for safe operation. **5.** Watch where you are going, especially at row ends, on roads, and around trees. **6.** Do not permit others to ride. **7.** Operate the tractor smoothly—no jerky turns, starts, or stops. **8.** Hitch only to the drawbar and hitch points recommended by tractor manufacturers. **9.** When tractor is stopped, set brakes securely and use park lock if available.
Guarding of Farm Field Equipment, Farmstead Equipment, and Cotton Gins 1928.57(a)(6(i) through (v)	**(6)** ***Operating instructions***. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all covered equipment with which he is or will be involved, including at least the following safe operating practices: **(i)** Keep all guards in place when the machine is in operation. **(ii)** Permit no riders on farm field equipment other than persons required for instruction or assistance in machine operation; **(iii)** Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment; **(iv)** Make sure everyone is clear of machinery before starting the engine, engaging pow-er, or operating the machine;

(v) Lock out electrical power before performing maintenance or service on farmstead equipment.

1928.57(d)(1)(viii)

(d) ***Cotton ginning equipment***. **(1)** ***Power transmission components***. **(viii)** In power plants and power development rooms where access is limited to authorized personnel, guard railings may be used in place of guards or guarding by location. Authorized employees having access to power plants and power development rooms shall be instructed in the safe operation and maintenance of the equipment in accordance with paragraph **(a)(6)** of this section.

Cadmium
1928.1027

Note: The requirements applicable to agricultural training requirements under this section are identical to those set forth in **29 CFR 1910.1027**.

88 Federal Employee Programs Training Requirements

The following training requirements have been excerpted from *Title 29, Code of Federal Regulations Part 1960*. Note that in addition to these requirements, *Part 1910*, relating to general industry, also contains applicable training standards.

Subject and Standard Number	Training Requirement
Financial Management 1960.7(c)(1)	**(c)** Appropriate resources for an agency's occupational safety and health program shall include, but not be limited to: **(1)** Sufficient personnel to implement and administer the program at all levels, including necessary administrative costs such as training, travel, and personal protective equipment.
Qualifications of Safety and Health Inspectors and Agency Inspectors 1960.25(a)	**(a)** Executive Order 12196 requires that each agency utilize as inspectors "personnel with equipment and competence to recognize hazards." Inspections shall be conducted by inspectors qualified to recognize and evaluate hazards of the working environment and to suggest general abatement procedures. Safety and health specialists as defined in **29 CFR 1960.2(s)**, with experience and/or up-to-date training in occupational safety and health hazard recognition and evaluation are considered as meeting the qualifications of safety and health inspectors. For those working environments where there are less complex hazards, such safety and health specializations as cited above may not be required, but inspectors in such environments shall have sufficient documented training and/or experience in the safety and health hazards of the workplace involved to recognize and evaluate those particular hazards and to suggest general abatement procedures. All inspection personnel must be provided the equipment necessary to conduct a thorough inspection of the workplace involved.
Safety and Health Services 1960.34(e)(1)	**(e)** ***Safety and health services***. The General Services Administration (GSA) will operate and maintain for user agencies the following services: **(1)** Listings in the "Federal Supply Schedule" of safety and health services and equipment which are approved for use by agencies when needed. Examples of such services are: Workplace inspections, training, industrial hygiene surveys, asbestos bulk sampling, and mobile health testing. Examples of such equipment are: Personal protective equipment and apparel, safety devices, and environmental monitoring equipment.
Agency Responsibilities 1960.39(b)	**(b)** Agencies shall provide all committee members appropriate training as required by subpart **H** of this part.
Training of Top Management 1960.54	Each agency shall provide top management officials with orientation and other learning experiences which will enable them to manage the occupational safety and health programs of their agencies. Such orientation should include coverage of section 19 of the Act, Executive Order 12196, the requirements of this part, and the agency safety and health program.
Training of Supervisors 1960.55(a) and (b)	**(a)** Each agency shall provide occupational safety and health training for supervisory employees that includes: supervisory responsibility for providing and maintaining safe and healthful working conditions for employees; the agency occupational safety and health program; section 19 of the Act; Executive Order 12196; this part; occupational safety and health standards applicable to the

assigned workplaces; agency procedures for reporting hazards; agency procedures for reporting and investigating allegations of reprisal; and agency procedures for the abatement of hazards, as well as other appropriate rules and regulations.

Training of Safety and Health Specialists 1960.56(a) and (b)

(b) This supervisory training should include introductory and specialized courses and materials which will enable supervisors to recognize and eliminate, or reduce, occupational safety and health hazards in their working units. Such training shall also include the development of requisite skills in managing the agency's safety and health program within the work unit, including the training and motivation of subordinates toward assuring safe and healthful work practices.

Training of Safety and Health Inspectors 1960.57

(a) Each agency shall provide occupational safety and health training for safety and health specialists through courses, laboratory experiences, field study, and other formal learning experiences to prepare them to perform the necessary technical monitoring, consulting, testing, inspecting, designing, and other tasks related to program development and implementation, as well as hazard recognition, evaluation and control, equipment and facility design, standards, analysis of accident, injury, and illness data, and other related tasks.

Training of Collateral Duty Safety and Health Personnel and Committee Members 1926.58

(b) Each agency shall implement career development programs for their occupational safety and health specialists to enable the staff to meet present and future program needs of the agency.

Each agency shall provide training for safety and health inspectors with respect to appropriate standards, and the use of appropriate equipment and testing procedures necessary to identify and evaluate hazards and suggest general abatement procedures during or following their assigned inspections, as well as preparation of reports and other documentation to support the inspection findings

Within six months after October 1, 1980, or on appointment of an employee to a collateral duty position or to a committee, each agency shall provide training for collateral duty safety and health personnel and all members of certified occupational safety and health committees commensurate with the scope of their assigned responsibilities. Such training shall include: the agency occupational safety and health program; section 19 of the Act; Executive Order 12196; this part; agency procedures for the reporting, evaluation and abatement of hazards; agency procedures for reporting and investigating allegations of reprisal; the recognition of hazardous conditions and environments; identification and use of occupational safety and health standards, and other appropriate rules and regulations.

Training of Employees and Employee Representatives 1960.59(a) and (b)

(a) Each agency shall provide appropriate safety and health training for employees including specialized job safety and health training appropriate to the work performed by the employee, for example: Clerical, printing, welding, crane operation, chemical analysis, and computer operations. Such training also shall inform employees of the agency occupational safety and health program, with emphasis on their rights and responsibilities.

(b) Occupational safety and health training for employees of the agency who are representatives of employee groups, such as labor organizations which are recognized by the agency, shall include both introductory and specialized courses and materials that will enable such groups to function appropriately in ensuring safe and healthful working conditions and practices in the workplace

and enable them to effectively assist in conducting workplace safety and health inspections. Nothing in this paragraph shall be construed to alter training provisions provided by law, Executive Order, or collective bargaining arrangements.

Training Assistance 1960.60(a) through (d)

(a) Agency heads may seek training assistance from the Secretary of Labor, the National Institute for Occupational Safety and Health and other appropriate sources.

(b) After the effective date of Executive Order 12196, the Secretary shall, upon request and with reimbursement, conduct orientation for Designated Agency Safety and Health Officials and/or their designees which will enable them to manage the occupational safety and health programs of their agencies. Such orientation shall include coverage of section 19 of the Act, Executive Order 12196, and the requirements of this part.

(c) Upon request and with reimbursement, the Department of Labor shall provide each agency with training materials to assist in fulfilling the training needs of this subpart, including resident and field training courses designed to meet selected training needs of agency safety and health specialists, safety and health inspectors, and collateral duty safety and health personnel. These materials and courses in no way reduce each agency's responsibility to provide whatever specialized training is required by the unique characteristics of its work.

(d) In cooperation with the Office of Personnel Management, the Secretary will develop guidelines and/or provide materials for the safety and health training programs for high-level managers, supervisors, members of committees, and employee representatives.

Role of the Secretary 1960.85(b)

(b) The Secretary shall provide leadership and guidance and make available equipment, supplies, and staff services to the Field Federal Safety and Health Councils to assist them in carrying out their responsibilities. The Secretary shall also provide consultative and technical services to field councils. These services shall involve aid in any phase of developing and planning programs; and in sponsoring, conducting, or supporting safety and health training courses.

Objectives of Field Councils 1960.87(d)

(d) To promote coordination, cooperation, and sharing of resources and expertise to aid agencies with inadequate or limited resources. These objectives can be accomplished in a variety of ways. For example, field councils could organize and conduct training programs for employee representatives, collateral duty and professional safety and health personnel, coordinate or promote programs for inspections, or, on request conduct inspections and evaluations of the agencies' safety and health programs.

OSHA Publications and Audiovisual Programs. OSHA 2019. OSHA/OICA Publications P.O. Box 37535, Washington, DC 20210-7535.

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Schedule and Registration Instructions. OSHA Training Institute, 1555 Times Drive, Des Plaines, IL 60018. Telephone: (847) 297-4810.

OSHA Safety and Health Training Guidelines for General Industry (PB-239-310/AS), National Technical Information Service, Springfield, VA 22161.

OSHA Safety and Health Training Guidelines for Maritime Employment (PB-239-311/AS), National Technical Information Service, Springfield, VA 22161.

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Supervisors Safety Manual, 1991, Seventh Edition, National Safety Council, Chicago, Il 60611.

Reference List of Audiovisual Materials, National Audiovisual Center, Washington, DC 20409.

Commissioner
Alaska Department of Labor
1111 West 8th Street
Room 306
Juneau, AK 99801
(907) 465-2700

Director
Industrial Commission of Arizona
800 W. Washington
Phoenix, AZ 85007
(602) 542-5795

Director
California Department
of Industrial Relations
45 Fremont Street
San Francisco, CA 94105
(415) 972-8835

Commissioner
Connecticut Department of Labor
200 Folly Brook Boulevard
Wethersfield, CT 06109
(203) 566-5123

Director
Hawaii Department of Labor
and Industrial Relations
830 Punchbowl Street
Honolulu, HI 96813
(808) 586-8844

Commissioner
Indiana Department of Labor
State Office Building
402 West Washington Street
Room W195
Indianapolis, IN 46204
(317) 232-2378

Commissioner
Iowa Division of Labor Services
1000 E. Grand Avenue
Des Moines, IA 50319
(515) 281-3447

Secretary
Kentucky Labor Cabinet
1047 U.S. Highway, 127 South
Frankfort, KY 40601
(502) 564-3070

Commissioner
Maryland Division of Labor
and Industry
Department of Licensing
and Regulation
1100 N. Eutaw Strret, Room 613
Baltimore, MD 21202-2206
(410) 767-2215

Director
Michigan Department
of Consumer and Industry
Services
4th Floor Law Building
P.O. Box 30004
Lansing, MI 48909
(517) 373-7230

Commissioner
Minnesota Department of Labor
and Industry
443 Lafayette Road
St. Paul, MN 55155
(612) 296-2342

Administrator
Nevada Division of Industrial
Relations
400 West King Street
Carson City, NV 89710
(702) 687-3032

Secretary
New Mexico Environment
Department
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502
(505) 827-2850

Commissioner
New York Department of Labor
W. Averill Harriman
State Office Building 12
Room 500
Albany, NY 12240
(518) 457-2741

Commissioner
North Carolina Department
of Labor
319 Chapanoke Road
Raleigh, NC 27603
(919) 662-4585

Administrator
Department of Consumer
and Business Services
Occupational Safety and Health
Division (OR-OSHA)
350 Winter Street, N.E.
Rm. 430
Salem, OR 97310-0220
(503) 378-3272

Secretary
Puerto Rico Department of
Labor and Human Resources
Prudencio Rivera Martinez
Building
505 Munoz Rivera Avenue
Hato Rey, PR 00918
(809) 754-2119

Director
South Carolina Department
of Labor, Licensing & Regulation
3600 Forest Drive
Koger Office Park,
Kingstree Building
110 Centerview Drive
P.O. Box 11329
Columbia, SC 29210
(803) 896-4300

Commissioner
Tennessee Department of Labor
710 James Robertson Parkway
Nashville, TN 37243-0659
(615) 741-2582

Commissioner
Industrial Commission of Utah
160 East 300 South, 3rd Floor
P.O. Box 146650
Salt Lake City, UT 84114-6650
(801) 530-6898

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Vermont Department of Labor
and Industry
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Administrator
Workers' Safety, & Compensation
Division (WSC)
Wyoming Dept. of Employment,
Herschler Building, 2nd Floor
East
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Denver, CO 80202-5716
Telephone: (303) 844-1600

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Room 420
San Francisco, CA 94105
Telephone: (415) 744-6670

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(AK,* ID, OR,* WA*)
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Suite 715
Seattle, WA 98101-3212
Telephone: (206) 553-5930

*These states and territories operate their own OSHA-approved job safety and health programs (Connecticut and New York plans cover public employees only). States with approved programs must have a standard that is identical to, or at least effective, as the federal standard.

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ADDENDUM

Addendum to U.S. Department of Labor, Occupational Safety and Health Administration, Publication No. 2254, ***Training Requirements in OSHA Standards and Training Guidelines***, Revised 1998.

New general industry training requirements for powered industrial trucks (1910.178(l), page 38.

NOTE: These new training requirements for powered industrial trucks also apply to OSHA standards 1915.120 (shipyard employment), 1917.1 (marine terminals), 1918.1 (longshoring) and 1926.602 (construction)..

Powered Industrial Trucks
1910.178(l)(1)(l) and (ii); (2)(l)(A) and (B)(ii) and (iii); (3)(l)(A) through (M); (ii)(A) through (l) (iii); (4)(i) and (ii)(A) through (E); (iii)(5), (6), and (7)

(l) ***Operator training.*** **(1)** ***Safe operation.*** **(I)** The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph.

(ii) Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the training required by this paragraph **(l)**, except as permitted by paragraph **(l)(5)**.

(2) ***Training program implementation*** **(I)** Trainees may operate a powered industrial truck only:

(A) Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and

(B) Where such operation does not endanger the trainee or other employees.

(ii) Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, videotape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

(iii) All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

(3) ***Training program content.*** Powered industrial truck operators shall receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace. **(I)** Truck-related topics:

(A) Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;

(B) Differences between the truck and the automobile;

(C) Truck controls and instrumentation: where they are located, what they do, and how they work;

(D) Engine or motor operation;

(E) Steering and maneuvering;

(F) Visibility (including restrictions due to loading);

(G) Fork and attachment adaptation, operation, and use limitations;

(H) Vehicle capacity;

(I) Vehicle stability;

(J) Any vehicle inspection and maintenance that the operator will be required to perform;

(K) Refueling and/or charging and recharging of batteries;

(L) Operating limitations;

(M) Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

(ii) Workplace related topics:

(A) Surface conditions where the vehicle will be operated;

(B) Composition of loads to be carried and load stability;

(C) Load manipulation, stacking, and unstacking;

(D) Pedestrian traffic in areas where the vehicle will be operated;

(E) Narrow aisles and other restricted places where the vehicle will be operated;

(F) Hazardous (classified) locations where the vehicle will be operated;

(G) Ramps and other sloped surfaces that could affect the vehicle's stability;

(H) Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;

(I) Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

(iii) The requirements of this section.

(4) ***Refresher training and evaluation*** **(i)** Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required by paragraph **(l)(4)(ii)** to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

(ii) Refresher training in relevant topics shall be provided to the operator when:

(A) The operator has been observed to operate the vehicle in an unsafe manner;

(B) The operator has been involved in an accident or near-miss incident;

(C) The operator has received an evaluation that reveals that the operator is not operating the truck safely;

(D) The operator is assigned to drive a different type of truck; or

(E) A condition in the workplace changes in a manner that could affect safe operation of the truck.

(iii) An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

(5) ***Avoidance of duplicative training.*** If an operator has previously received training in a topic specified in paragraph **(l)(3)** of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

(6) Certification. The employer shall certify that each operator has been trained and evaluated as required by this paragraph **(l)**. Certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

(7) ***Dates.*** The employer shall ensure that operators of powered industrial truck are trained, as appropriate, by the following dates: **(A)** If the employee was hired prior to December 1,1999, the initial training and evaluation of that employee must be completed by December 1, 1999. **(B)** If the employee was hired after December 1, 1999, the initial training and evaluation of that employee must be completed before the employee is assigned to operate a powered industrial truck.